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NOVEMBER • 1958

MPM Metal Products Manufacturing

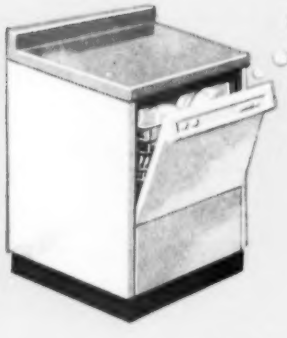
PRODUCTS LIBRARY
OCT 31 1958
OF MICHIGAN

Serving the Appliance and Fabricated Metal Products Industry

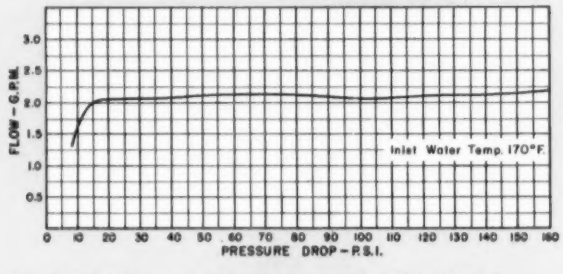
NEW DETROIT Constant Flow Water Control Valve

An improved valve design offering these important advantages for DISHWASHERS, VENDING MACHINES, WATER SOFTENERS and other equipment:

- ★ Positive opening and closing at pressures up to 200 P.S.I.
- ★ Constant predetermined flow at outlet of valve.
- ★ Standard dishwasher and washing machine flow rates. Others on application. Also supplied without flow control.
- ★ Integral inlet strainer.
- ★ Built-in water hammer protection optional.
- ★ Forged brass body – available with choice of connections.
- ★ Equally efficient for hot or cold water service.
- ★ For all standard voltages.



TYPICAL FLOW CURVE

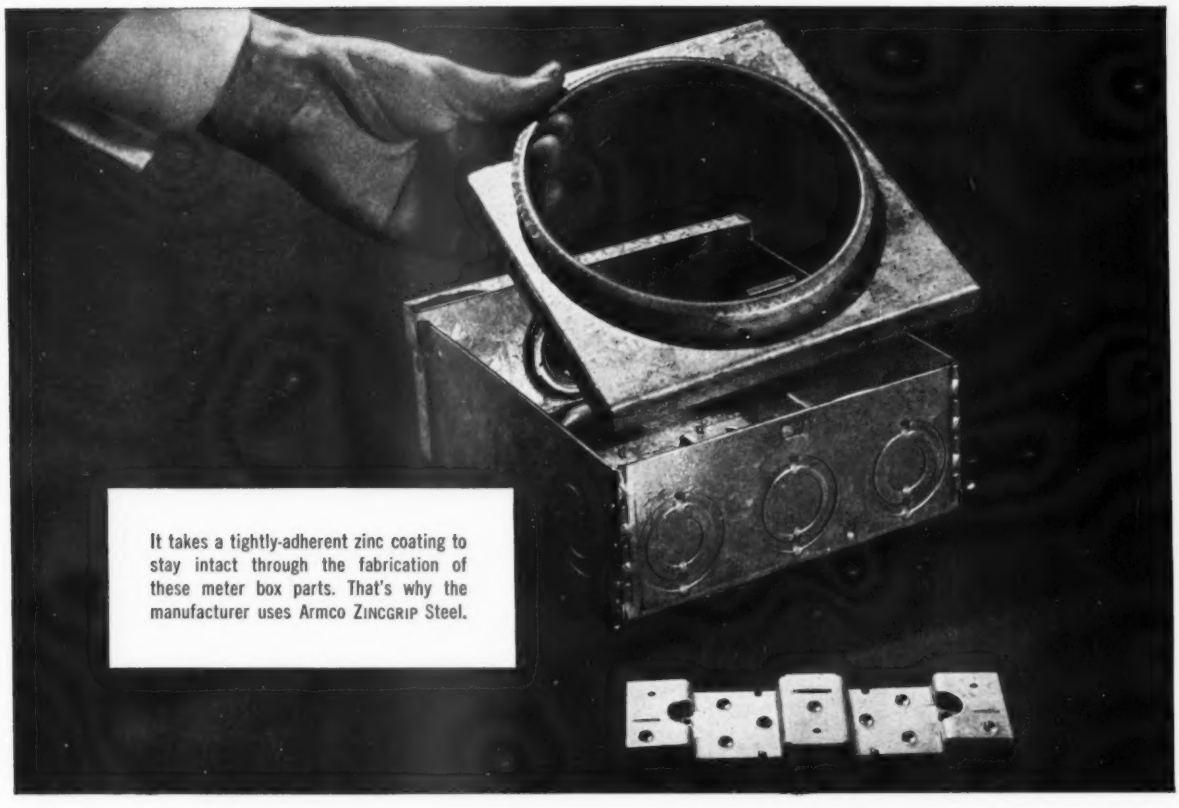


Detroit Controls Division of American-Standard, 5900 Trumbull Avenue, Detroit 8, Michigan.

American-Standard and Standard® are trademarks of American Radiator & Standard Sanitary Corporation.

AMERICAN-Standard

DETROIT CONTROLS DIVISION


It takes a tightly-adherent zinc coating to stay intact through the fabrication of these meter box parts. That's why the manufacturer uses Armco ZINCGRIP Steel.

When You Use Armco ZINCGRIP Steel:

SEVERELY-WORKED PARTS STAY ZINC-PROTECTED

Parts of this electrical meter box are tough fabricating tests for any steel. But what's remarkable is that they are fabricated from zinc-coated steel!

Because it is Armco ZINCGRIP®—ductile steel with an exceptionally tight hot-dip coating of zinc—there is no flaking or peeling of the protective zinc coating. It takes as severe a draw as the base metal.

This kind of performance is standard for Armco ZINCGRIP Steel. A continuous hot-dip zinc-coated steel, it has a record of more than 21 years' service in hundreds of manufacturing plants.

Experience has also shown that Armco ZINCGRIP Steel can save money by replacing many parts that formerly required costly painting or plating for protection from rust.

If you have avoided using zinc-coated steel because your product parts require severe fabrication, let us give you more information about this special steel that *stays zinc-protected even when severely worked.* Just fill in and mail the coupon, or call your nearby Armco Sales Office.

New steels are born at Armco

ARMCO STEEL CORPORATION, 7008 Curtis St., Middletown, Ohio

Send complete information on Armco ZINCGRIP Steel

WE MAKE _____

NAME _____ TITLE _____

FIRM _____

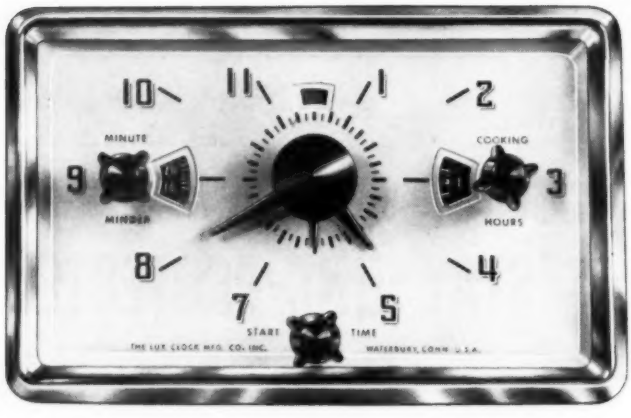
STREET _____

CITY _____ ZONE _____ STATE _____

ARMCO STEEL

Armco Division • Sheffield Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

a page full of preference for LUX timers

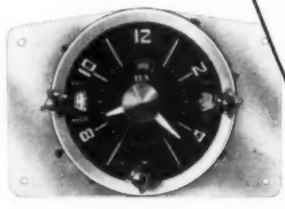


Hundreds of leading appliance manufacturers prefer these field-proven LUX Range Timers... unrivaled for their complete dependability, accuracy, and simplicity of use.

Combining the latest in engineering design with operation by Lux's improved synchronous motor equipped with Lube-Less bearings, LUX timers offer these sales plusses:

EXCLUSIVE ONE KNOB "COOK-NOW" TIMING
SEPARATE MINUTE MINDER TOP-SIDE CONTROL
"ANY ANGLE" APPLICATION
COMPACT SIZE
SIMPLICITY IN SETTING

The precision performance of LUX Timers can be matched only by using LUX features.



LUX...first...for lasting TIME

THE LUX CLOCK MFG. CO., INC.

WATERBURY 20, CONNECTICUT

Fawcett
SAMCO
TAPPAN
Gurney
O'KEEFE & MERRITT
Orbon RANGES
Royal Rose Ranges
Chef's Delight
Modern Maid
Chambers
COOKS WITH THE GAS TURNED off
Skelgas
VESTA
Gas Ranges
BROWN STOVE WORKS, INC.
Home Comfort
chef master
HARDWICK STOVE COMPAN
Kelvinator
National Stove
ROPER
DIXIE
Enterprise
MAGEE
suburban
Vernois
CONSTELLATIO

MPM

(including finish)

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NBP BPA

NOVEMBER • 1958

VOL. 15 • NO. 11

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METAL PRODUCTS MANUFACTURING

FROM RAW METAL TO FINISHED PRODUCT

A trade publication devoted to the interests of the metal products manufacturing industry with special editorial attention to home appliances. The editorial scope covers design, engineering, market and statistical information and technical and practical information on plant facilities and all phases of manufacturing "from raw metal to finished product." Free controlled circulation to top management, purchasing, engineering and key plant management and supervision in metal product manufacturing plants. To others, subscription price is $8.00 per year, domestic. To all other countries $10.00 per year (U.S. funds). Single copies, $1.00.

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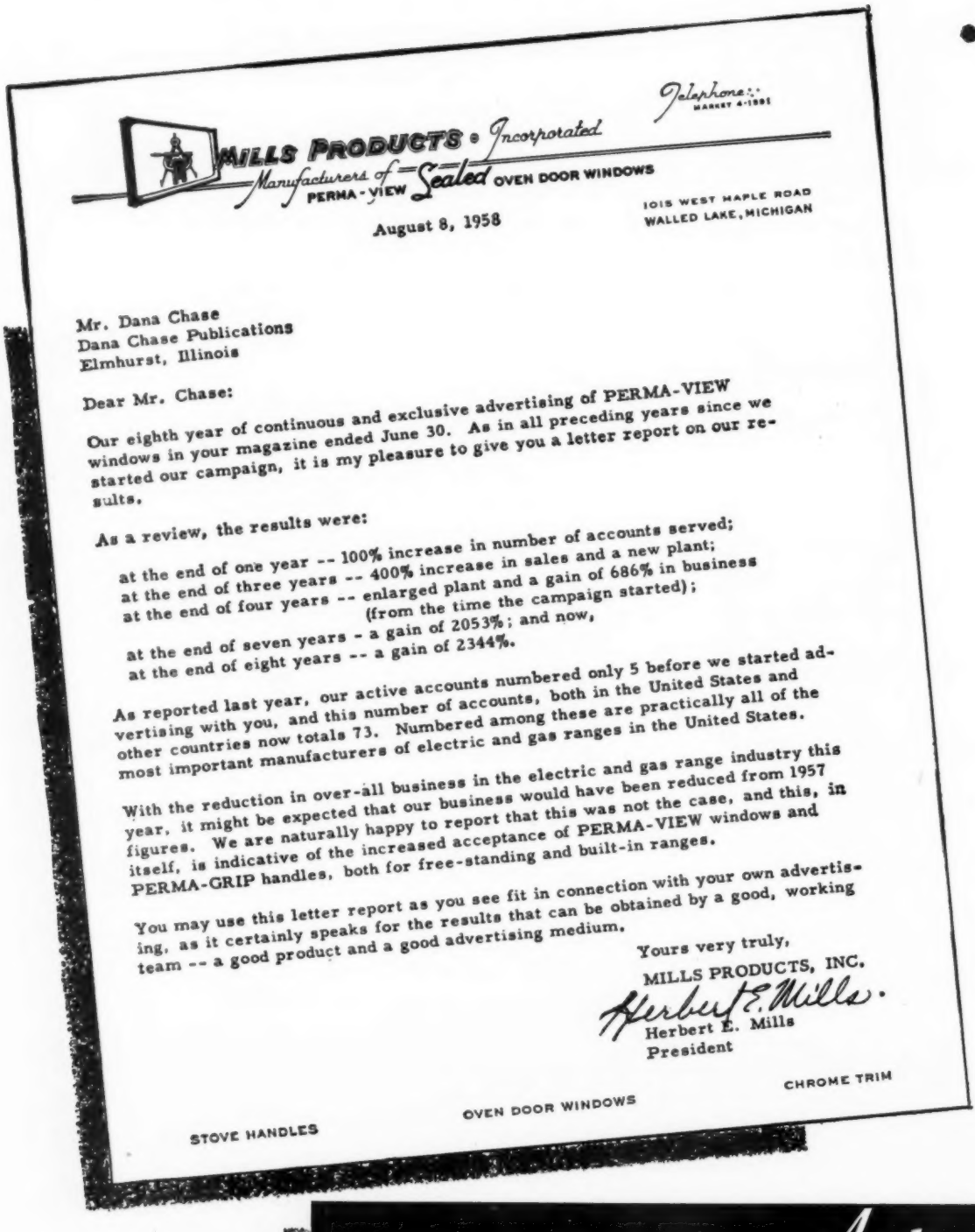


MILLS PRODUCTS • Incorporated
Manufacturers of PERMA-VIEW Sealed OVEN DOOR WINDOWS

Telephone: MARKET 4-1555

1015 WEST MAPLE ROAD
WALLED LAKE, MICHIGAN

August 8, 1958

Mr. Dana Chase
Dana Chase Publications
Elmhurst, Illinois

Dear Mr. Chase:

Our eighth year of continuous and exclusive advertising of PERMA-VIEW windows in your magazine ended June 30. As in all preceding years since we started our campaign, it is my pleasure to give you a letter report on our results.

As a review, the results were:

at the end of one year -- 100% increase in number of accounts served;
at the end of three years -- 400% increase in sales and a new plant;
at the end of four years -- enlarged plant and a gain of 686% in business (from the time the campaign started);
at the end of seven years - a gain of 2053%; and now,
at the end of eight years -- a gain of 2344%.

As reported last year, our active accounts numbered only 5 before we started advertising with you, and this number of accounts, both in the United States and other countries now totals 73. Numbered among these are practically all of the most important manufacturers of electric and gas ranges in the United States.

With the reduction in over-all business in the electric and gas range industry this year, it might be expected that our business would have been reduced from 1957 figures. We are naturally happy to report that this was not the case, and this, in itself, is indicative of the increased acceptance of PERMA-VIEW windows and PERMA-GRIP handles, both for free-standing and built-in ranges.

You may use this letter report as you see fit in connection with your own advertising, as it certainly speaks for the results that can be obtained by a good, working team -- a good product and a good advertising medium.

Yours very truly,
MILLS PRODUCTS, INC.
Herbert E. Mills
Herbert E. Mills
President

STOVE HANDLES OVEN DOOR WINDOWS CHROME TRIM

...an

SERVING THE *Appliance* AND

8 Year Story of Advertising RESULTS!

INCREASE IN SALES 2344%

AND IN CUSTOMERS 1360%

A CASE HISTORY OF PERMA-VIEW OVEN DOOR WINDOWS AS PRODUCED AND SOLD BY MILLS PRODUCTS, INC. AND ADVERTISED EXCLUSIVELY IN MPM

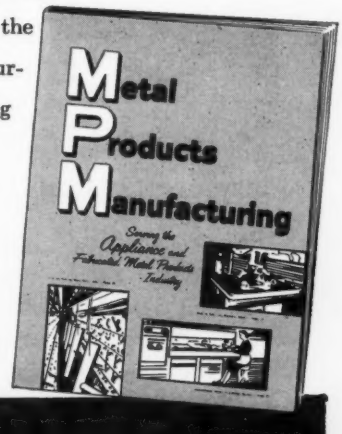
Here is one of the rare instances where advertising results can be definitely measured...because...Mills Products, Inc. travels no field men, all contacts being made by the principals from the factory...and...MPM is the only advertising medium used for promoting PERMA-VIEW windows.

The first PERMA-VIEW advertisement appeared in July, 1950. Mills Products, Inc. carried a continuous campaign of one black and white page each month for five years, except for an occasional two-color spread. The current advertising program in MPM includes black and white bleed pages, two-color bleed pages and two-color bleed spreads.

What have been the results of this continuous campaign?

The accompanying letter details the increases in sales at the end of one, three, four, seven, and eight years compared with the year immediately preceding the start of advertising. A 2344% increase in sales and an increase from 5 to 73 customers in the volume producing range industry represents positive proof of advertising results.

Here is POSITIVE PROOF that if you have the right material, equipment, component or service for the appliance and fabricated metal products manufacturing field...and present it properly in MPM ...the men who engineer and build the metal products, plus those who purchase for and manage the producing plants, will respond.



Dana Chase PUBLICATIONS

Elmhurst National Bank Building • York Street at Park Avenue • Elmhurst, Illinois

TErrace 4-5280

ND FABRICATED METAL PRODUCTS INDUSTRY

TURCO Gets a Better, More Uniform Finish

And Cuts Paint Cost 35% with—

RANSBURG

NO. 2 PROCESS

Frequent color changes are simplified now in the painting of playground equipment with Ransburg Electro-Spray in this St. Louis plant. Long, tubular parts, as well as these smaller pieces, are uniformly coated with the Ransburg reciprocating disk.

QUALITY IMPROVEMENT! That was Turco Manufacturing's chief reason for changing from flo-coat to electrostatic spray painting of their quality line of playground equipment.

Not only is Ransburg No. 2 Process providing a higher quality, uniform coating on all parts, but Turco is saving 35% in paint cost!

Simplicity in color change with Electro-Spray is another important advantage here. With Turco's production methods, colors are changed 15 times in an 8-hour shift. Now, changes are made on the fly with no down-time. By contrast, the former "stop and go" method would mean over an hour's lost time in a day's operation.

NO REASON WHY YOU CAN'T DO IT TOO!

Whatever your product, if it's painted, we'd like to tell you more about the worthwhile savings and benefits which can be yours with RANSBURG ELECTROSTATIC PAINTING PROCESSES. Write for our No. 2 Process brochure which cites many examples of electrostatic spray painting on a wide variety of products.

Call or write

RANSBURG
Electro-Coating Corp.
P.O. Box 7822, Indianapolis 23, Ind.

INDUSTRY MEETINGS

AUTOMATIC MERCHANDISING

National Automatic Merchandising Association's 12th Annual Convention and Exhibit, Kiel Auditorium, St. Louis, Mo., November 2-5, 1958.

PORCELAIN ENAMEL

Porcelain Enamel Institute's 20th Annual Shop Practice Forum, University of Illinois, Urbana, Ill., November 5-7, 1958.

ELECTRICAL MANUFACTURERS

National Electrical Manufacturers' Association's Annual Meeting, Traymore Hotel, Atlantic City, N. J., November 10-14, 1958.

MECHANICAL ENGINEERS

The American Society of Mechanical Engineer's Annual Meeting, Statler and Sheraton McAlpin Hotels, New York, N. Y., November 30-December 5, 1958.

REFRIGERATING ENGINEERS

American Society of Refrigerating Engineer's Semi-Annual Meeting, Hotel Roosevelt, New Orleans, La., December 1-3, 1958.

HEATING AND AIR CONDITIONING

National Warm Air Heating and Air Conditioning Association's Committee Meetings and Annual Convention, Cleveland, Ohio, December 1-4, 1958.

HOUSEWARES

National Housewares Manufacturers' Association's National Housewares Exhibit, Chicago, Ill., January 12-16, 1959.

INDUSTRIAL HEATING

Industrial Heating Equipment Association, Inc., Hotel Cleveland, Cleveland, Ohio, January 19-20, 1959.

ELECTRICAL ENGINEERS

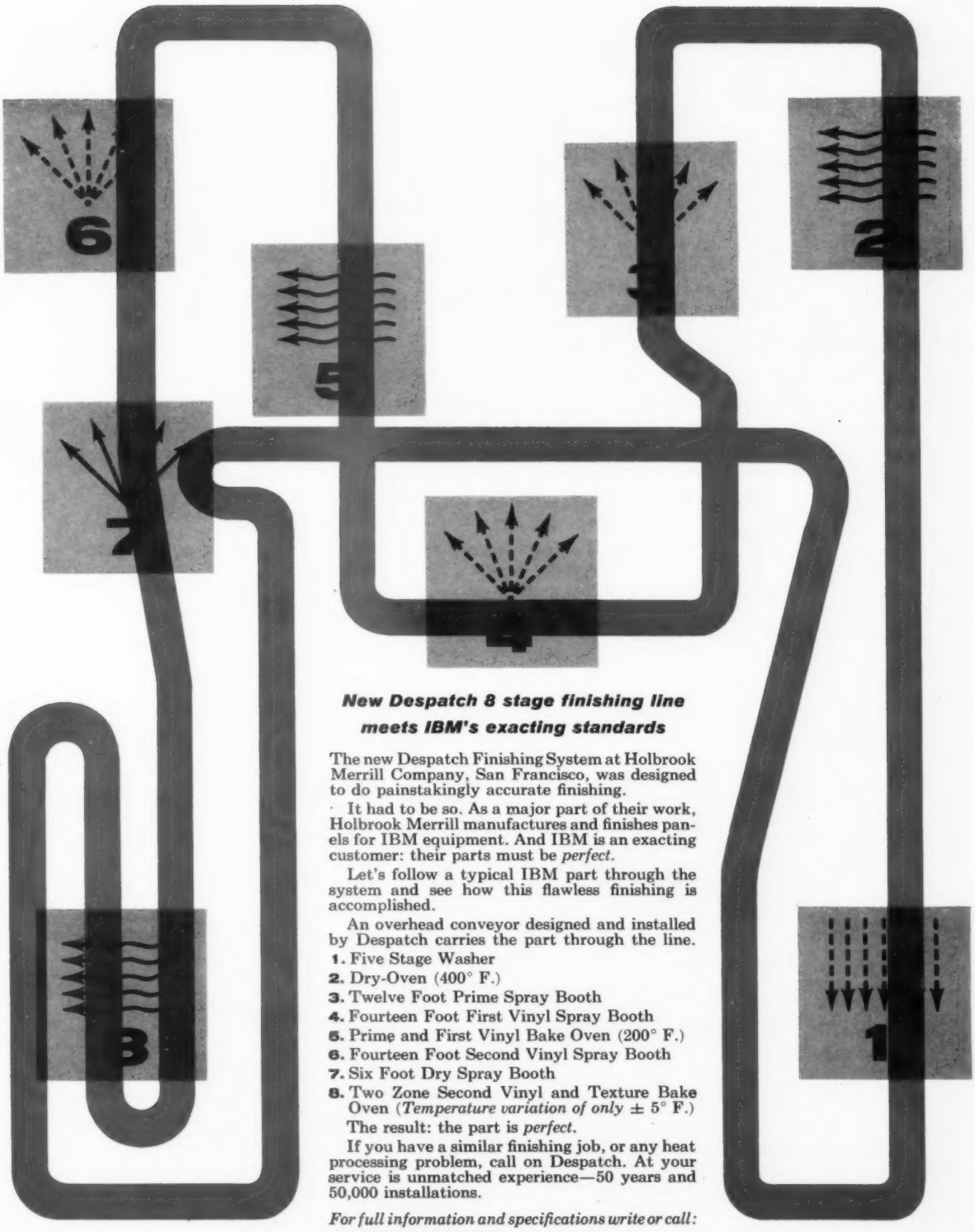
American Institute of Electrical Engineer's Winter General Meeting, New York, N. Y., January 19-23, 1959.

PLANT MAINTENANCE

Tenth Plant Maintenance and Engineering Show, Public Auditorium, Cleveland, Ohio, January 26-29, 1959.

HEATING, AIR CONDITIONING

American Society of Heating and Air Conditioning Engineers, Inc., Annual Meeting and Exposition, Philadelphia, Pa., January 26-30, 1959.



New Despatch 8 stage finishing line meets IBM's exacting standards

The new Despatch Finishing System at Holbrook Merrill Company, San Francisco, was designed to do painstakingly accurate finishing.

It had to be so. As a major part of their work, Holbrook Merrill manufactures and finishes panels for IBM equipment. And IBM is an exacting customer: their parts must be *perfect.*

Let's follow a typical IBM part through the system and see how this flawless finishing is accomplished.

An overhead conveyor designed and installed by Despatch carries the part through the line.

1. Five Stage Washer
2. Dry-Oven (400° F.)
3. Twelve Foot Prime Spray Booth
4. Fourteen Foot First Vinyl Spray Booth
5. Prime and First Vinyl Bake Oven (200° F.)
6. Fourteen Foot Second Vinyl Spray Booth
7. Six Foot Dry Spray Booth
8. Two Zone Second Vinyl and Texture Bake Oven (*Temperature variation of only* ± 5° F.)

The result: the part is *perfect.*

If you have a similar finishing job, or any heat processing problem, call on Despatch. At your service is unmatched experience—50 years and 50,000 installations.

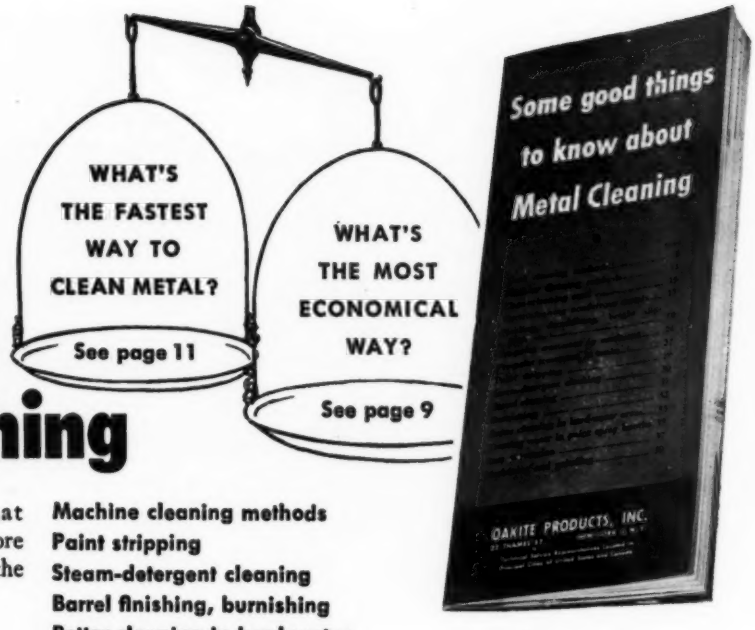
For full information and specifications write or call:

DESPATCH OVEN CO.

DESPATCH OVEN COMPANY

619 S.E. 8th St., Minneapolis 14, Minn., Dept. 402E

Oakite's FREE Booklet on Metal Cleaning


WHAT'S THE FASTEST WAY TO CLEAN METAL?
See page 11
WHAT'S THE MOST ECONOMICAL WAY?
See page 9
Some good things to know about Metal Cleaning
OAKITE PRODUCTS, INC.

answers many questions that mean better production, more profit for you. Just look at the table of contents:

Tank cleaning methods
Electrocleaning steel
Electrocleaning nonferrous metals
Pickling, deoxidizing, bright dipping
Applying iron phosphate coatings in preparation for painting
Applying zinc phosphate coatings
Cleaning, removing rust and conditioning for painting in one operation
Machine cleaning methods
Paint stripping
Steam-detergent cleaning
Barrel finishing, burnishing
Better cleaning in hard water areas
Treating wash water in paint spray booths
Rust prevention
Coolants and lubricants for machining and grinding

FREE Write today for a copy of this 44-page, illustrated booklet.

Export Division Cable Address: Oakite

SPECIALIZED INDUSTRIAL CLEANING
OAKITE
MATERIALS - METHODS - SERVICE
SCIENCE

Technical Service Representatives in Principal Cities of U. S. and Canada

OAKITE PRODUCTS, INC.
26 Rector St., New York 6, N. Y.

Send me, without obligation, a copy of your booklet: "*Some good things to know about Metal Cleaning*"

NAME _____

COMPANY _____

ADDRESS _____

You'll want to know the answers

Can one cleaning material do all metal-cleaning jobs? *See page 5.*

What kind of cleaner attracts both oil and water? How does this help remove buffing compound residues and pigmented drawing compounds? *See page 8.*

Why clean ferrous and nonferrous metals in separate tanks? *See page 10.*

What are the advantages of reverse current for electrocleaning steel? *See page 15.*

For electrocleaning nonferrous metals, what are relative advantages of cathodic, cathodic-anodic and soak-anodic cleaning? *See page 17.*

Can you electroclean brass without tarnishing? *See page 18.*

How do bright dips make metals brighter? *See page 21.*

Can you clean steel and condition it for painting for less than 20 cents per 1,000 square feet? *See page 24.*

Would you like a cleaner that removes rust and oil at the same time; often eliminating all need for pickling? *See page 28.*

What's the best way to clean parts that are too large to be soaked in tanks or conveyed through washing machines? *See page 30.*

Does your burnishing barrel produce a luster you are proud of? *See page 32.*

What do you do when the overspray neither sinks nor floats in the wash water in your paint spray booth? *See page 35.*

Do you dry steel parts before anti-rusting? *See page 37.*

SOUTHERN'S PALLETIZED SCREWS

CUT YOUR COSTS!

Southern's advanced design palletized bulk system is based on proven engineering principles that individually or combined can save time, production and storage, regardless of the size of your operation:

1. A wire-bound telescopic-type 9x9x6½" corrugated container of heavy-duty 275# test, provides industry-accepted units for handling throughout your plant including your production line, where top of carton can "double" as individual bulk container. Adoption of Southern's famous **EZ to C©** label provides error-proof fastener identification.

2. **AT NO EXTRA COST TO YOU** Southern's new bulk cartons are prepared for shipment on sturdy 30" x 30" two-way entry pallets, each with four layers of nine cartons each, steel strapped for handling ease and security.

Investigate the **MULTIPLE ADVANTAGES** of this new completely cost-free system that lets Southern fasteners put a new light on your production and profit picture.

Phone or write for specific data about how Southern Screw's bulk system can be quickly put to work in your operation.

Machine Screws & Nuts • Tapping Screws •
Wood Drive Screws • Carriage Bolts •
Wood Screws • Hanger Bolts •

Warehouses:
New York • Chicago • Dallas • Los Angeles

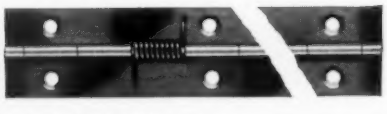
Southern®
SCREW COMPANY
STATESVILLE • NORTH CAROLINA

NATIONAL LOCK
CONTINUOUS HINGES

for all types of appliances, cabinets and other metal applications

EQUAL WINGS — STAGGERED HOLES

UNEQUAL WINGS — PARALLEL HOLES (ON SPECIAL ORDER)



SPRING HINGES

Available in steel, brass, stainless steel and aluminum, National Lock hinges are offered with equal and unequal wings . . . 3/4" to 4" widths . . . up to 96" lengths . . . with and without holes. Write for complete information.

HANDLES · PULLS · LATCHES
CATCHES · HINGES · SCREWS
CABINET HARDWARE · BUTTS
SPECIAL-PURPOSE FASTENERS

NATIONAL LOCK COMPANY
Rockford, Illinois

from the Editor's Mail

Rheem section of value

Gentlemen: In your September, 1958 issue of METAL PRODUCTS MANUFACTURING you carry an article on Page 26 discussing glass lined water heaters.

In this article, you mention a special Rheem section in the January, 1956 issue of this publication. I am desirous of obtaining this Rheem section if it is at all possible.

Stanley T. Christensen
Chief Manufacturing Engineer
Waste King Corp.
Los Angeles, Calif.

In compliance with Mr. Christensen's request, a reprint of the special Rheem section is on the way. Eds.

Special section complete, comprehensive

Gentlemen: Harold Bull, who is off on a cross country tour, asked me to let you know how much we enjoyed the current home laundry section of METAL PRODUCTS MANUFACTURING. In our opinion, we feel this is the most complete, comprehensive job you have done yet. Not only was the format attractive, but it also was most informative, even to those of us in the industry.

A salute to you for your annual salute to the home laundry appliance industry.

A. J. Tobin
Norge, Div. of Borg-Warner Corp.
Chicago, Ill.

Enameling case history

Gentlemen: We would appreciate having you forward tear sheets from December, 1957 issue entitled "Case history of a new type porcelain enameling furnace."

Also, tear sheets from January, 1956 issue covering special Rheem section on the facilities of the U. S. plants. Thank you.

A. J. Pellegrini, Vice President
Pennsylvania Range Boiler Co.
Philadelphia, Pa.

Reprints are on their way to Mr. Pellegrini. Eds.

Booklet on stainless steel

Gentlemen: Would you please forward us your 32-page booklet on stainless steel. We fabricate from wire a variety of stainless steel screws in both slotted, Phillips, and hexagon head. We would be interested in the data you can supply.

Thank you for your attention to this request.

James E. Arkison
Keystone Screw Corp.
Willow Grove, Pa.

The booklet to which Mr. Arkison refers is furnished free, through letterhead request, by Washington Steel Corp., Washington, Pa. Eds.

MPM valuable as reference

Gentlemen: This letter is to notify you of my change in address and position from manager of production engineering, General Electric Co., Bloomfield, N. J., to chief engineer, mower division, Newark Stove Co., Newark, Ohio. I would appreciate receiving my copy of METAL PRODUCTS MANUFACTURING sent to this new location for my personal use and for general circulation in the engineering section.

I have found this publication to be very helpful, and

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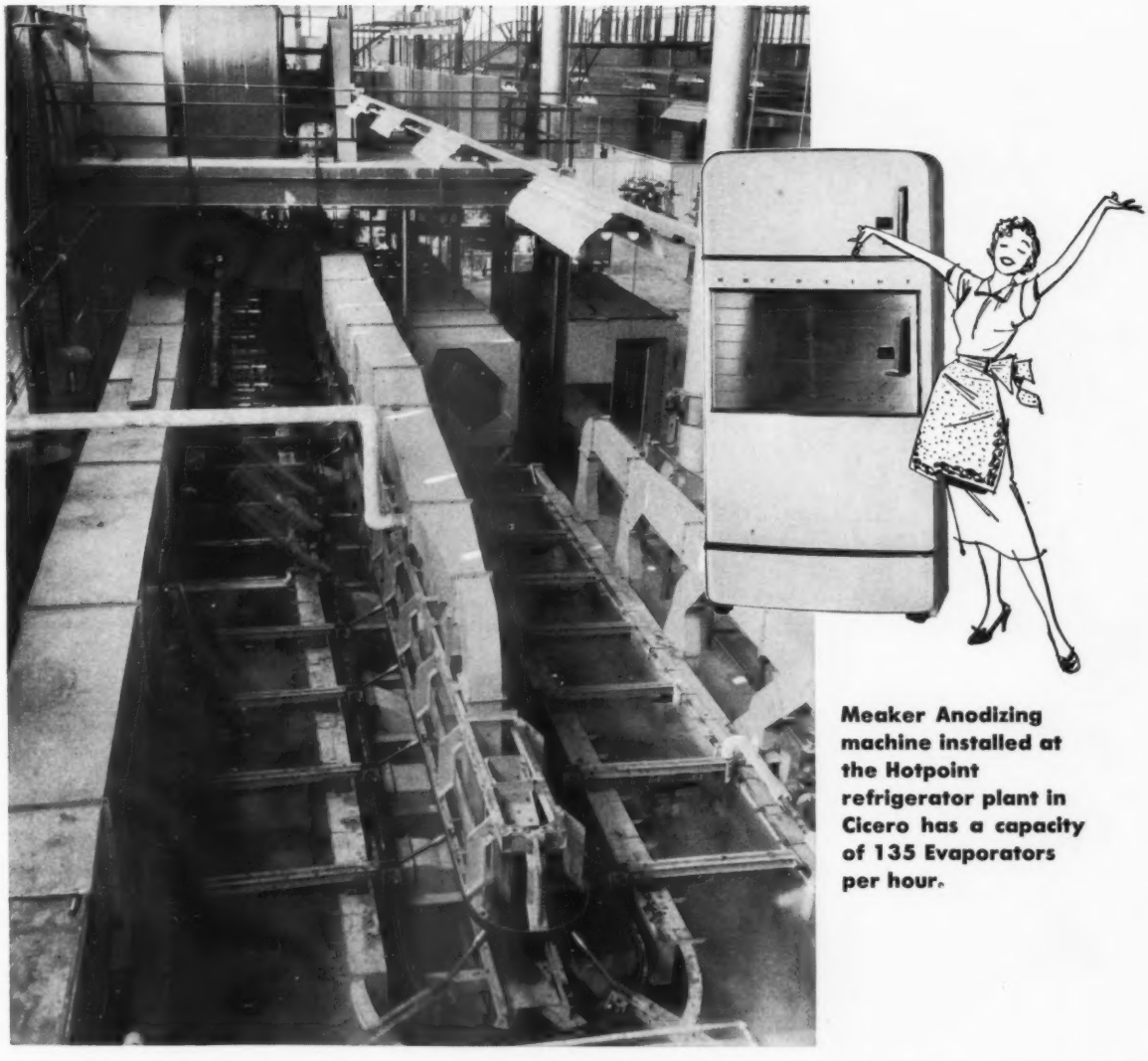

Meaker Anodizing machine installed at the Hotpoint refrigerator plant in Cicero has a capacity of 135 Evaporators per hour.

MEAKER helps HOTPOINT meet new trend toward lighter Anodized Metals

Engineered and designed as an integral part of Hotpoint's production line, **this Meaker Anodizing machine is used for the complete anodizing process.** It was expressly developed to handle various components and difficult to drain refrigerator parts such as deep, box-like "evaporators." Carrier arms in this case were engineered to raise to a 30° angle assuring complete pour-out of liquid and eliminating the carryover of fluids from one tank to another.

Meaker engineers think like plant engineers and it's this kind of detailed thinking that has helped Hotpoint solve many other plating problems and produce a finer end product at the lowest possible cost. On your next metal finishing problem, call Meaker—**this experienced company can show you tomorrow's ideas for plating and processing.**

MEAKER
METAL FINISHING EQUIPMENT

The Meaker Company *1629 South 55th Avenue, Chicago 50, Illinois*

for detailed information on Meaker equipment write for free Bulletins, c/o Dept. A. D.

when the time comes...

for new and better glass products — whether it be today or 2000 A.D. — Marsco's craftsmen engineering team will develop them.

The Junior Spaceman above has the best in interplanetary protection — a glass space helmet — because glass can be bowed to fit any desired shape and yet it can be tempered to impart extreme resistance to impact.

You or your family don't need space helmets today but chances are glass could improve the utility and beauty of your product and make it more salable today.

Let Marsco's craftsmen engineering team impart to your product all the advantages of glass.

ask for the man from

Marsco

Here are some of the applications for Marsco heat-treated, tempered and hardened glass parts:

- CLOCK & TIMER CRYSTALS
- OVEN DOORS
- RADAR EQUIPMENT
- AIRCRAFT ACCESSORIES
- PHOTOGRAPHIC EQUIPMENT
- LIGHT LENSES
- DIALS & NAME PLATES
- TELEVISION EQUIPMENT
- INSTRUMENTS
- MEDICAL EQUIPMENT

Special shapes for Instruments, Gauges, Household and Industrial Appliances.

MARSCO MFG. CO., 2909 S. HALSTED ST., CHICAGO 8, ILL.

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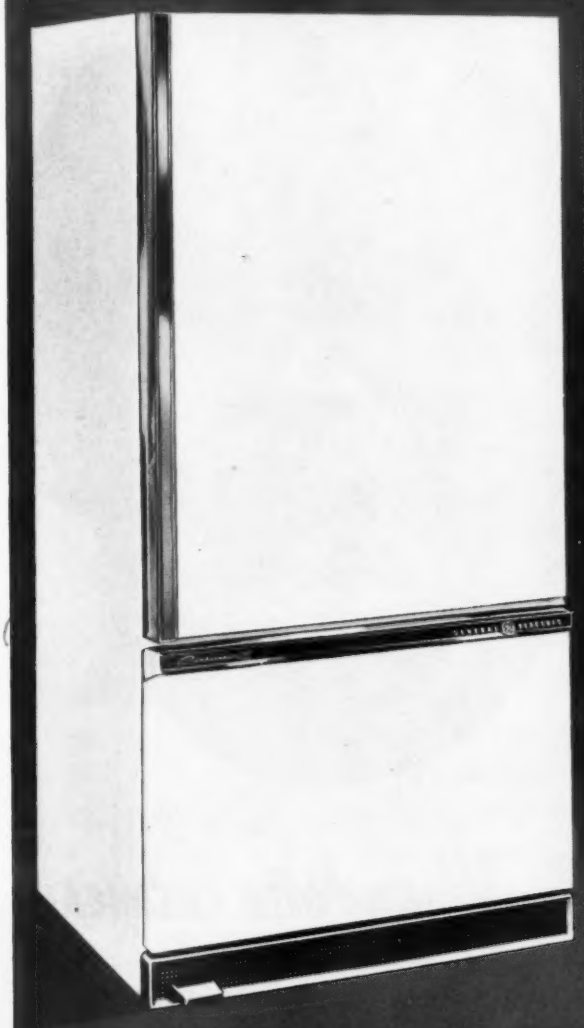

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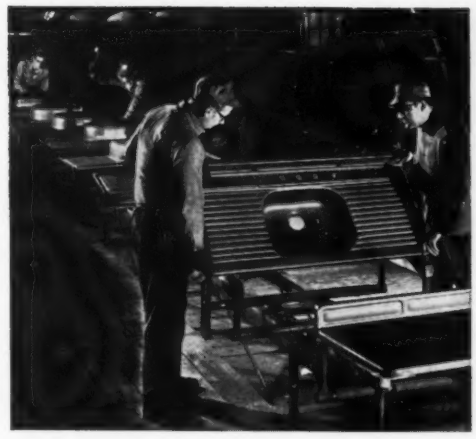

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These smartly designed, functional units by Youngstown Kitchens Division of American-Standard will not warp or split, are vermin-proof, quiet operating, and finished in baked-on enamel in warm, long-lasting colors. Quality control standards require commercial quality cold-rolled sheets like that produced by Youngstown Sheet and Tube Company. This quality-controlled steel provides: Increased Production—Fewer Rejects—Accurate, Fast Forming—Reduced Fabrication and Die Costs.

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PHILCO . . . another user of PERMA-VIEW WINDOWS

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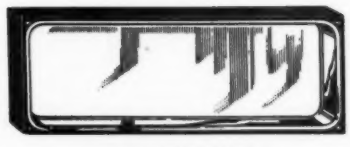

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PHILCO CORP.

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using

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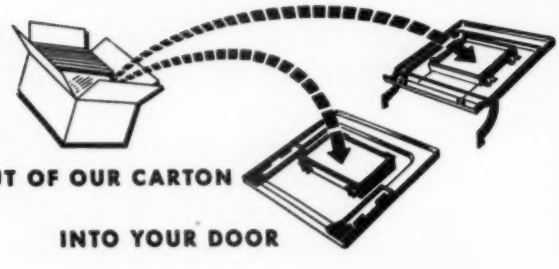

OUT OF OUR CARTON

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Philco Corp. has been a satisfied user of PERMA-VIEW windows for a number of years. Now 72 other leading manufacturers are using "the window you can see through always."

The strong, steel-encased, double-pane PERMA-VIEW window incorporates the finest quality heat resisting glass. It is mechanically sealed to prevent infiltration of vapors and to eliminate "fogging." This "No-Fog" window meets the constantly growing demand for "visible baking."

The PERMA-VIEW window is pre-engineered and comes to you ready for immediate installation in your range, "out of our carton into your door." Let our specialized production lines serve as a part of your sub-assembly facilities. Phone or write us for complete details on the ease and economy of adding this sales feature to your new ranges.

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THE finish LINE

AN OLD ADAGE IS COMING BACK.....

and coming back strong in some quarters. You are all familiar with it — it goes like this: *"They don't make 'em like they used to."* This certainly is a time-worn adage, but we hear it with increasing frequency in informal group discussions around homes, clubs and wherever the subject of man-made products comes into the picture.

While the adage may be used somewhat indiscriminately in connection with broad groups of products, the attention is too often focused on two product groups — automobiles and home appliances.

Take the car owner, for instance, who has owned five models of one of the country's top-name cars since 1949 — and has encountered far more major service problems with his 1958 model than with all of the four preceding cars combined.

"Oh!" you say, "but that's true of automobiles maybe, but not of appliances." If you really believe this to be true, just start your own personal, quiet, informal survey of family groups and encourage those present to speak up. You will be surprised at how many (women particularly) will say "no more products from that manufacturer after the trouble I've had with their . . . . "

You will hear all kinds of "reasons," from cheap materials, company policy and poor service to labor conditions in the plants, but the fact remains that regardless of where the *blame* is placed, the *responsibility* remains with the manufacturer. Some "good old names" in the appliance industry are suffering almost irreparable damage to full line products due to one weak product in the line — one weak link in the chain.

Where such weak spots have shown up, it is going to require a long record of consistent production of fine products (good materials and components, good engineering, quality manufacturing, and top notch field service) to regain the name, once lost.

THE UPGRADING OF FIELD SERVICE.....

Although field service has long been considered one of the most important segments of a successful overall appliance merchandising program, there is fresh evidence that it will get additional upgrading in many organizations.

One example is the announcement by Robert E. Brooker, president, WHIRLPOOL, that effective September 24th, customer services have become a function of his office.

Brooker said, "We regard service as being basic to sales, and believe that more and more decisions to buy are tied to satisfactory and economical service performed on appliances in customer's homes . . . . "

In commenting on the elevation of service to a function under the president's office, Robert P. Lewis, director of customer relations at Whirlpool, said, "In a company such as ours, we are constantly searching for ways and means to do a better job for our customers. While we have moved forward in service techniques, we find we are faced with a constantly-changing pattern of customer needs. This (organization) change provides the flexibility required to implement our overall objective of improving profits through increased sales and improved service."

FRIGIDAIRE has a two-fold program underway, designed to provide better service for its customers by: (1) reducing the likelihood of service through continual improvement of product quality, and (2) increasing the efficiency of the service organization.

E. E. Landis, service manager for Frigidaire, points out that quality improvement of a product is carried out under close surveillance of *a top management quality committee*, from the engineering design stage on through purchasing, production, inspection, and sale to the customer. He emphasizes that the committee keeps itself posted on product performance across the country through a weekly field reporting system.

Training for dealer servicemen heads the list of activities which Landis outlines as being aimed at increasing the effectiveness of field service organizations.

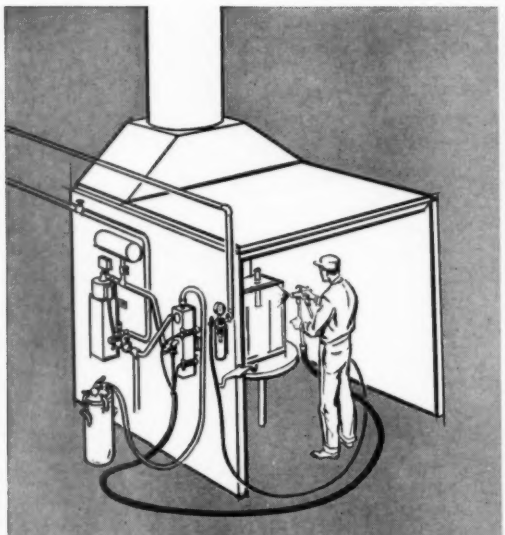
Frigidaire now has thirty permanent appliance and air conditioning service training schools across the country. Strategically located to best serve the nationwide network of Frigidaire dealers, these schools are completely outfitted with shop facilities, model kitchens, classrooms, and auditorium facilities. Factory-assigned instructors provide specialized training courses for dealer service personnel. During the past five years an average of 33,000 servicemen-students have been trained annually at training centers and at factory schools.

Whirlpool and Frigidaire represent only two of the many appliance manufacturers who are taking definite steps to see that the customers of their many products will receive the *right service at the right time.*

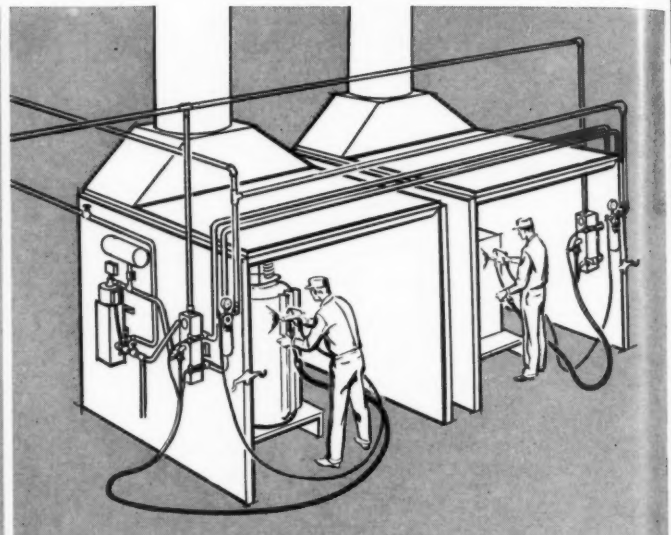
Dana Chase

EDITOR AND PUBLISHER

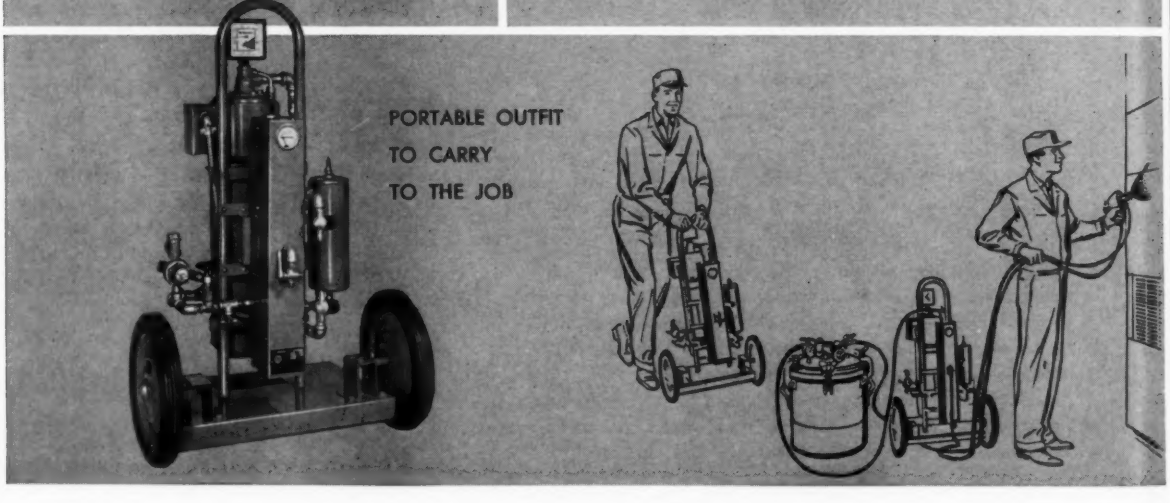
How DeVilbiss Hot S

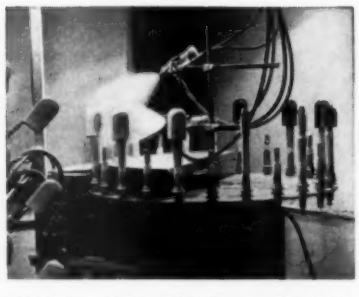


STANDARD OUTFIT . . .



ADAPTABLE TO MANY REQUIREMENTS





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For it's this one-source responsibility that means important savings to *you* in the initial purchase; in the assurance of high product quality; and in the efficient performance of each individual component.

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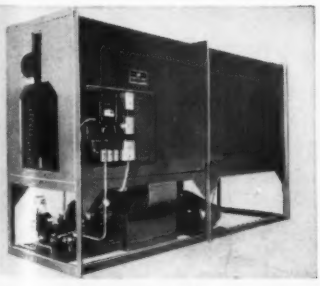

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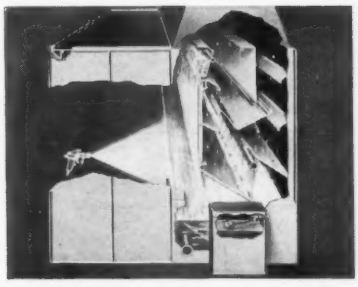

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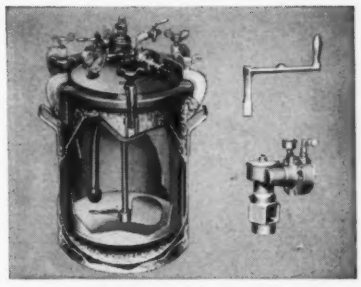

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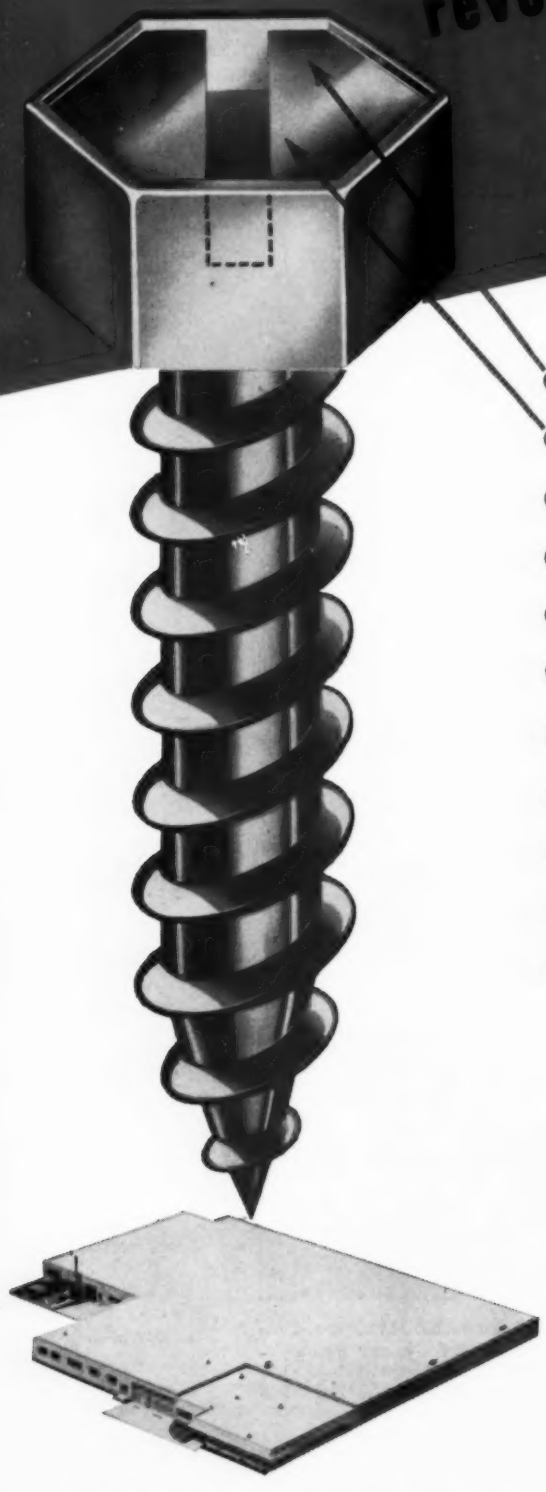

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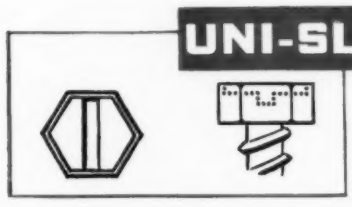

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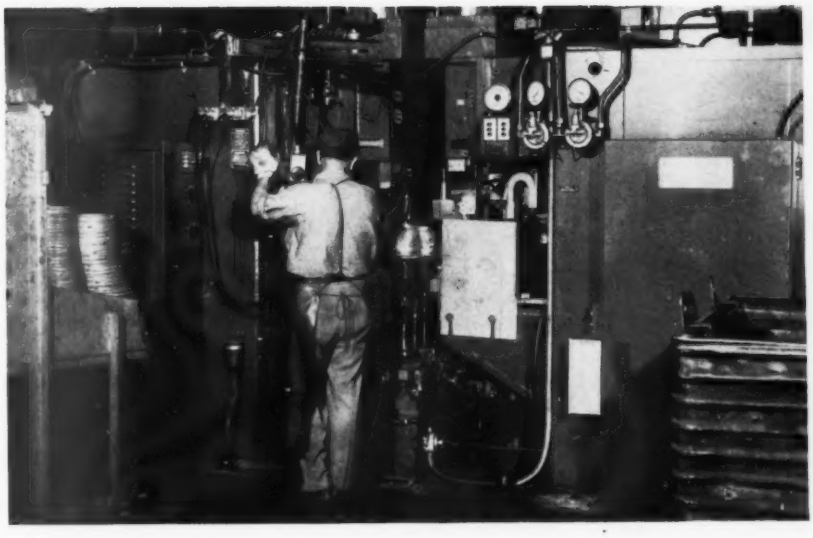

Large area spot welds solve an unusual problem

holes drilled through spots no longer give trouble by forcing burrs between the flange of a torque tube housing and the mating reinforcement ring - - - technique may prove practical for other components in the metal products field

REAR FLANGES FOR REAR TORQUE tubes used on Buick cars are portions of deeply-drawn parts produced from 0.200 inch stock in the sheet metal department of the Buick Motor Division's Flint, Mich. plant. To stiffen the flange, a flat ring of the same thickness is spot welded to the flange at six points.

Until recently, the six holes for bolts that fasten the reinforced flange to a mating part were drilled at points half way between the equally spaced spot welds. In drilling, burrs sometimes were forced between the flange and the ring, with the result that mating surfaces were not flat and did not afford tight joints, even when the bolts were tightened fully.

To overcome this trouble, it was decided to make spot welds of large area and drill the holes through the six welds, as this would make it impossible for burrs to be forced between the flange and the ring. Accordingly, two 250-kva three-phase frequency conversion spot welders were purchased and set up face to face, as in Fig. 1. Each has duplicate electrodes of large transverse section that are so set as to make two welds simultaneously, one by each machine, and at opposite ends of the flange mean diameters.

These welds are roughly elliptical and measure 9/16 x 13/16 inch minimum across the two axes of each weld. The areas are ample to leave plenty of welded metal around all sides of holes drilled later at the center of each weld. To make six equally-spaced welds in each flange, the parts are set in an air indexing fixture, Fig. 2, that is turned through 60 degrees twice after the first pair of welds is made.

This is a two-place fixture, but only one pair of parts is in welding position, and is indexed twice during each cycle of the two machines. When one fixture is in welding position, the other is at one side where it is loaded during the welding cycle at the other fixture. Then, an air shifting device moves the two fixtures in a straight line. This brings a welded assembly into position for unloading and reloading while the second one is brought to welding position and the three sets of two welds are made.

In this way, two men working from opposite sides of the machines can load, weld, and unload about 125 assemblies an hour. Loading and unloading are done by hand, but cycling of the machines and motions of the fixtures are automatic. Subsequently, six 0.415-inch holes, one through the center of each weld, are drilled in a separate machine.

Figure 1 (Above) — These two welders, one at each side of a fixture, each make one spot weld of large area at each side of a drawn Buick torque tube housing flange to fasten it to a mating ring. One man works at each side. Figure 2 (Right) — Close-up of the two-place fixture used to hold parts while welding. When one station is in welding position, the other is unloaded and reloaded. At the welding station, the fixture indexes 60 degrees twice. Three pairs of two welds are made on each flange of three positions.

NEW

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Partially mechanized press line yields high output of bumper parts

mechanical hand having two grippers removes two stampings at a time from draw dies, depositing them onto belts for advance to opposite sides of remaining presses for other operations on both right and lefts

by Herbert Chase

STAMPINGS FOR FRONT BUMPER upper ends for each Oldsmobile produced in the Oldsmobile Division plant, Lansing, Mich., are heavy gage parts required in rights and lefts. Blanks for drawing first are trimmed to contour in an 800-ton press. Both right and left blanks are made in this press from a single oblong sheet but, although the press has two dies, only one blank per working stroke is sheared. A second is cut after a portion of the sheet is shifted manually above the second die. Both blanks are pushed through the dies by an air operated pusher and fall onto chains that carry them out to an operator who stacks the blanks in separate piles and who also removes offal that is cut so as to fall into chutes that make it unnecessary to reach into the dies.

Draws made in the blanks are quite deep, for stock of 0.089-in. thickness, and a 1,600-ton press of double-acting type and equipped with two dies is employed, one drawing rights and one lefts. Blanks are fed to dies by hand.

Drawing is facilitated by use of a two-speed clutch arranged for driving the press through planetary gearing during that part of the press cycle in which the heavy draw takes place. This press normally makes twelve working strokes a minute and produces two pieces, one right and one left, in each such stroke.

Removal of stampings from the draw dies normally is done two pieces at a time by a single mechanical hand as shown in the accompanying photo. This unit has, at its lower end, a T-shaped extension whose horizontal leg supports one air-operated gripper at each end.

When the draw dies open, the grippers advance and their jaws close on horizontal flanges of the two stampings. Thereupon, the stampings are lifted slightly and the whole mechanical hand assembly is rocked back, pulling both stampings out of the die. Near the end of the outward stroke, the jaws open, allowing both stampings to drop onto belts for transfer to feed chutes for the next presses in the line. Then the hand is swung back and grippers come to rest back of the die ready for extracting at the end of the next press cycle. In this way, a single mechanical hand serves both of the two dies in the press.

For safety purposes, there is, back of each draw die, a limit switch having an operating finger that is struck by the stamping as it is pulled out of the die. Should either gripper fail to grip and remove the corresponding stamping, the press will not make its next cycle until resetting is done. This arrangement is to preclude possible double loading of either die and also to prevent either die from closing on a stamping if it is not completely clear of the die.

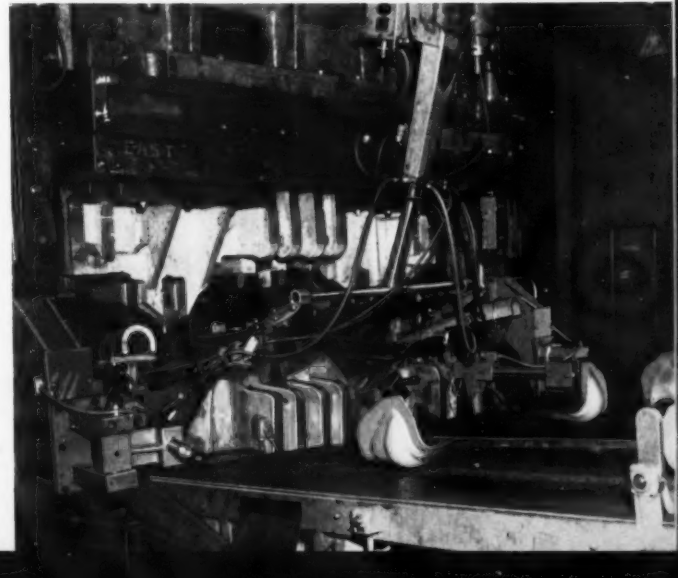
As half of the stampings drawn in the press are rights and half are lefts, all subsequent operations on the line have to be performed by one or the other of two separate sets of dies. Accordingly, the two belts leaving the draw press diverge, one delivering to the left side of the line and one to the right side. In most cases, however, pairs of rights and left dies are used in the same press. One die is loaded from the right side and one from the left side of the press by different operators.

Belts from the draw press discharge stampings into chutes that feed the next press in the line. If the chutes become filled with stampings because they are not removed in step with the draw operations, limit switches open and the press is stopped until there is space for further delivery without pileup.

Most presses in the line are 800-ton capacity. All have control buttons on both sides and no press can be closed until operators on both sides close buttons. These are so placed that the operators must be in safe position. Dies in the press in this line perform trimming, flanging and piercing operations, some of which require cam operations.

Handling of the stampings after they leave the belts is largely manual but includes some short transfer belts or chutes between presses along the line. Offal from dies is caught in slides or is thrown manually into short elevators that deliver the offal into tote tubs. In general, progress along the press line is in step with that in the initial draw operation but, if troubles develop, the

to Page 66 →



Rear of the press that draws one right and one left bumper part in each working stroke. Both parts are withdrawn simultaneously by a mechanical hand having two grippers. The stampings are dropped onto diverging belts for transfer to two sides of the remainder of the press line.

Noise control of domestic appliances

by Dr. R. Plunkett • CONSULTING ENGINEER, GENERAL ELECTRIC CO.

ALTHOUGH A NUMBER OF CRITERIA for the quantitative description of sound have been published within the last few years [6, 7, 8]*, they are neither simple enough or precise enough for use by the designer. Using well established principles, a designer is able to meet any established sound criterion in any domestic appliance with little or no loss in function, at a price. The problem then becomes one of economics: how much is the customer willing to pay to meet what sound criterion? This problem is complicated by the fact that it is easy enough to make a measurement of sound but it takes a well trained expert to interpret its meaning.

One might naturally think that the magnitude of the noise is an important factor; it is, but how important. Most human reactions operate on a logarithmic basis (Weber's Law); each time the physical sensation doubles in amplitude, the subjective reaction increases by the same amount, this also holds true for sound [1]. A pure tone sound will appear to increase by a significant amount when the sound pressure level is roughly tripled (10 db). Less than this increase makes almost no impression after a lapse of time [2]. A really substantial change in measured sound level is necessary before there is any influence on the reputation of a product. This effect is even easier to understand when it is realized that the normal variation in supposedly identical appliances is at least 10 db, usually more.

*Numbers in parentheses refer to Bibliography.

The actual amount of noise produced is meaningless until it is related to the environment and use. An electric clock which stands on a bedside table must be many times more quiet than an air conditioner which is making the customer more comfortable. In previous years we have thought that a vacuum cleaner that did not have a powerful sound would be suspected of not doing its job but now, in a more sophisticated society, we realize that noise cannot add sales appeal. However, it is still true that the large air conditioner in the large (and noisy) store may be allowed to be noisier than the window unit in a small and quiet bedroom [3].

Reaction based on experience

Customer reaction is influenced still further by past experience. There is little objection to a certain amount of noise from clothes- or dish-washers, they have always been that way. On the other hand, over the years refrigerators have been made remarkably quiet; the consumer expects them to become even more quiet.

Probably the most serious problem in noise control is the proper description of noise. A "quality" sound is more acceptable than a "cheap" one. There is remarkably good agreement on whether or not a sound has "quality" but, as yet, we have no quantitative measure. In general, the lower the frequency, the more impressive the sound; automobile manufacturers take advantage of this by using damping materials that inhibit higher frequencies, as a result car doors on even inexpensive models shut with a "thud" instead of a clang or tinny rattle [4]. There is, of course, an historical reason for this reaction; we tend to associate low frequencies with heavier and, therefore, more durable sheet metal. Noise which has most of its energy contained in one single frequency has a typical siren sound and is less easily endured than sound which is spread over more of the frequency spectrum. Again there is a relatively simple explanation for this; the ear has the remarkable property of being able to identify single frequency tones at levels which are many times lower than the overall background noise [5]. Thus, a single frequency will stand out, a more complex noise will tend to fade into the background.

Duration important

The duration of the noise is another important effect. A series of clicks and rattles at irregular intervals are more easily noticed than continuous sound, but may be less objectionable if they are not unexpected. It is a common experience to be wakened by the electric clock stopping when the power goes off; the clock noise itself is not noticeable but a change in this noise is enough to waken even a sound sleeper. The relative importance of single frequency and wide band noise may be assessed [6] but it is much more difficult to put a number on reaction to clicks and buzzes.

Character of noise in the broad sense is very difficult to assess. Everyone is in favor of musical tones but one man's music is another man's dissonance; many people do not appreciate modern symphony. In general, however, we may say that a sound which consists of a fairly large number of constant amplitude, single-frequency notes of about the same magnitude will make a more pleasing impression than one in which the frequency components are fluctuating in a random manner. On the other hand, when noise is concentrated in a relative narrow band in the middle of the audio frequency range, it will interfere with speech comprehension more severely than if it is spread out over the whole spectrum. Recent papers have shown how to put a quantitative measure on the speech interference of constant noise sources [7].

In short, the annoyance quotient of noise depends on:

1. Background noise
2. Frequency content
3. Magnitude
4. Duration
5. Past experience

All except the last of these factors have been gathered together in a chart which enables the acoustic engineer to predict public reaction to a specific measured noise rather accurately [8]. An ex-

ample of the agreement between predicted reaction and the ratings of a jury test are shown in Table I.

TABLE I
CLOCK NOISE COMPARISON

	Clock A	Clock B	Clock C	Clock D
Jury Test	123	100	48	55
Measurement	127	100	48	38

Two basic sources of noise

If we go through this prediction process and discover that the public reaction will be unfavorable, we would then like to know how to change the noise. In order to do that we must know how the noise is produced. The two major mechanisms are structure-borne vibration and air-flow modulation. (See Fig. 1). The first of these starts with a vibratory force. The force makes some part of the structure vibrate; this part is connected by a transmission path to a loudspeaker which finally radiates sound to the air. A reduction in efficiency of any of these elements will reduce the noise output in like ratio and the effects are cumulative. If the vibratory force is reduced, for example by balancing a rotor, the output sound due to that cause is reduced proportionately. In the case of one appliance motor, electromagnetic forces were reduced by increasing the air gap and this reduced the overall appliance noise. In another case brush noise was reduced by manufacturing smoother commutators. It is often possible to make the response to the force smaller by proper design of the part [12]. In general, making a part stiffer or heavier will reduce its liability to vibration. Decreasing the efficiency of the transmission path is always worthwhile; common examples are vibration isolators, grommets and gaskets; in one case, we were able to achieve a 3 db reduction in noise by using simple grommets around the hold-down bolts of an appliance case. Contrary to common opinion, this does not damp or absorb vibration energy, it only keeps it from getting out. It is, of course, clear that any reduction in the efficiency of the loudspeaker will cause a further reduction in sound level. If the radiating surface is broken up into smaller areas and made stiffer, it will radiate less noise; stiffening ribs in the base plate of food mixer made a two to one reduction in radiated sound pressure.

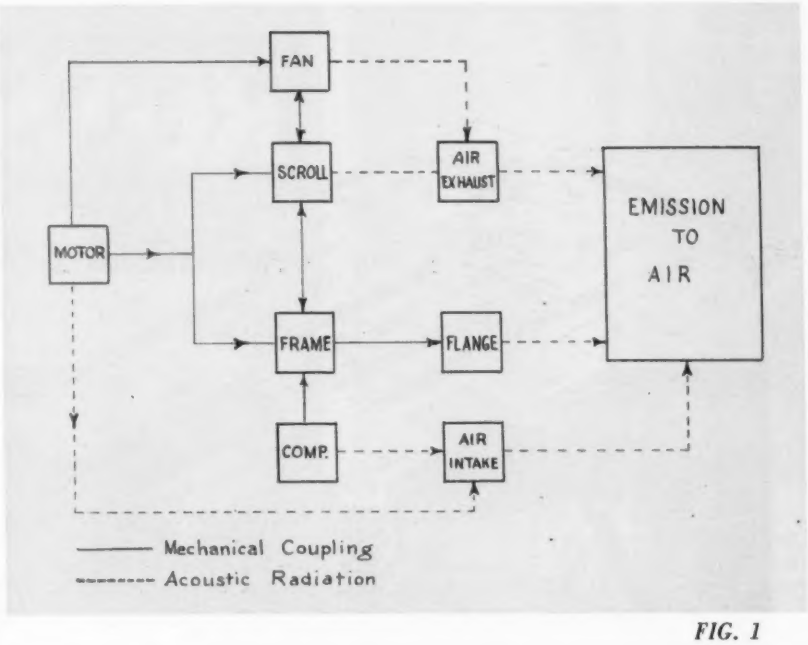


FIG. 1

The second method of producing noise is modulation of the air flow. One example of this is in fan driven air [9] although it is not always the most significant source. There is always some fluctuation in flow corresponding to the blade passing frequency which causes noise of this frequency and its multiples. One method of control is to use that air moving method which causes least noise. The next is to use designs which create less fluctuation; wide blade home cooling fans make much less noise than the old fashioned narrow blades. Major improvement in this area is often possible by minor redesign of the air flow passages and outlets. Careful design of the flow passage of vacuum cleaners accounts for more than 20 db of noise reduction. In one case the exhaust vent for cooling air in a small appliance had three times the area of the intake. Cutting down this area made a sizeable reduction in noise with no loss in cooling efficiency.

Once an appliance is built, it is important to find the source of the greatest noise; the best clue is an accurate frequency analysis. Fig. 2 shows such an analysis for a geared synchronous motor. Frequency analysis of a small, high speed appliance driven by a series motor showed that the worst component had a frequency at eight times per revolution. There were eight commutator bars which caused eight electrical surges per revolution; measurements made while running the motor on A.C., D.C., various loads and speeds led to some minor electrical design changes which reduced this noise. Accuracy of frequency measurement is particularly important in appliances driven by induction motors when it will show whether the original source is due to line frequency (electromagnetic forces) [10] or rotating speed (mechanical or unbalance forces).

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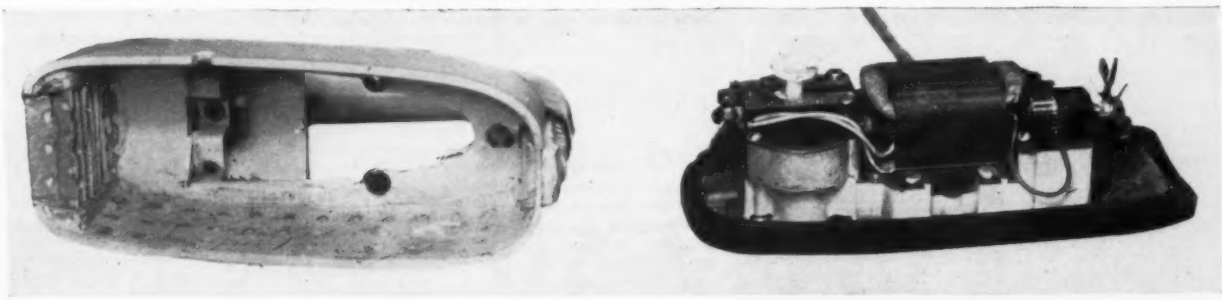
Acoustically-treated mixer base with grommets at left. Mixer base at right.



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There's a vast difference in both results and cost between finishing painted metal surfaces, for example, in an heterogeneous assortment of unrelated processing units and finishing such surfaces in an engineered production line system, all under a single design and manufacturing responsibility.

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(Left) — Model makes selection of food combination from Automat. Warming oven at left shows shelving. (Above) — Workers select food upon arrival at work. About two hours time is required to warm dinners.

Engineering a new food automat

WHEN R. T. MONTAG, JR., Montag, Inc., Portland, Oregon, decided that his company should make a food automat primarily for in-plant feeding, but which could serve in other areas as well, he asked his engineers to design one that would fulfill the limits of dispensing food. Also, it was to be aesthetically pleasing, readily saleable, and easy for the vendor to service. He wanted a unit that would be a year-round cafeteria for employees and employers.

The design engineers came up with an all-frozen food automat combined with a separate, specially-designed warming oven. The number of ovens used is according to plant need. They can be placed near the automat, or in areas where workers normally assemble during the lunch period.

The employees select their meals when they arrive at work, or during their coffee or rest break, and place them in the warming oven. The food heats while they work, and two hours are required for warming. Each automat holds approximately 200 dinners and many other individual items. The ovens cannot overheat. Meals are packed in disposable aluminum containers. Free plastic eating utensils are provided. With the automat-oven combination, there is no time lost waiting in line for meals.

Both automat and ovens operate automatically on 110 volt current. The automat measures 31 inches deep, 70 inches long, and 74 inches high. It was designed to go through a standard doorway, with the length governed by the amount of food wanted in it, and the installation of the machine. Height was no consideration except for the number of packages wanted for the machines. A sample of food might include braised sirloin tips, buttered mashed potatoes, buttered corn bread, cherry pie, and ice cream; however, all the service and variety of any cafeteria is available.

Many months were spent in designing the mechanical parts of the automat in order to dispense food and still maintain freezing capacity of the unit. Each machine can handle 470 packages, but variety depends upon what the machine is "selling," or what the vendor wants to sell. Basically, the machine was designed for as much variety as possible.

The food packages are dispensed from their racks through a chute which brings them from the back of the machine to the front, center door. Food packages are dispensed, like cigarettes, by inserting the proper coin (5, 10, 25), and pushing a knob for selection. A rejector coin mechanism (bad coins are

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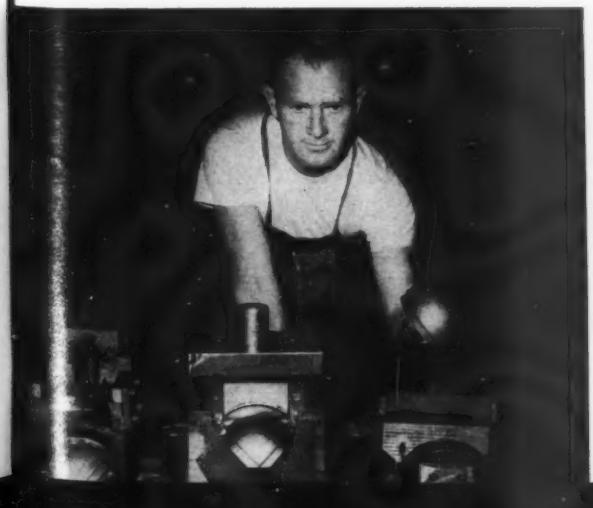
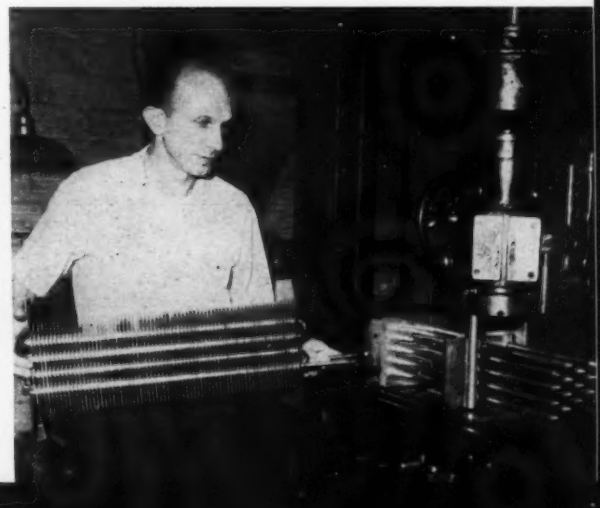


(Left) — Dies used for fabricating "orange peel" corners for outside shell of Automat. L. to R.: form and flange die; notch and trim die; reform radius die. (Right) — Finished condenser. Fins on tubes are spaced ¼ inch apart, with 86 fins in one assembly. At right is vertical milling machine used for assembling fins to condenser tubes.



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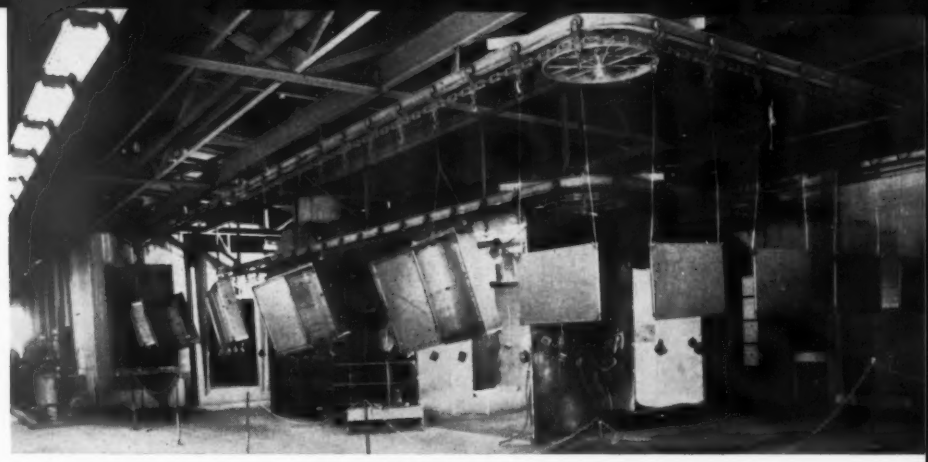
PHOTOS COURTESY DESPATCH OVEN CO.



Parts entering three-stage washer at left for (1) cleaning and phosphatizing, (2) plain water rinse, and (3) chromic acid final hot rinse. Layout permits expanding washer to five stages when desired. Products return through adjacent dry-off oven into first spray booth in immediate foreground.

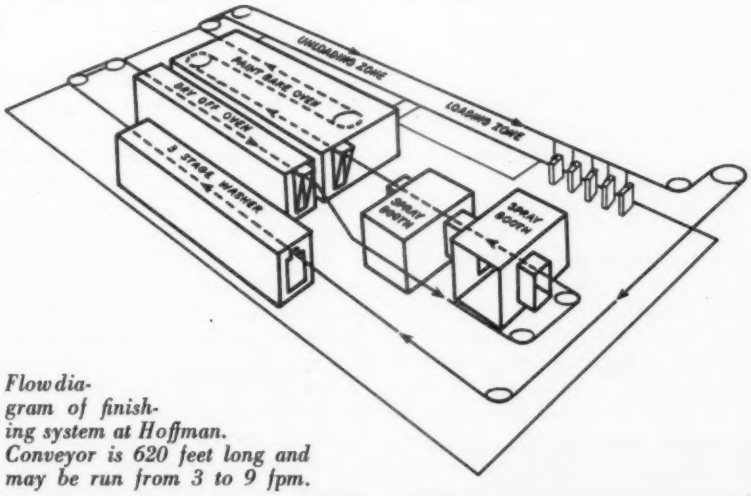
New finishing system boosts production capacity 300%

A NEW CONVEYORIZED SYSTEM, with 3-stage washer, dry-off oven, 2 water-wall spray booths, and bake oven, enables Hoffman Engineering Co. to finish all their steel fabricated products, ranging in size from small electrical outlet boxes to 5-ft. panel enclosures, automatically except for individual spraying, according to Hoffman officials.

Versatility is the key feature of the new continuous-conveyor system, Hoffman reports, with readily regulated washing, spraying, baking operations and conveyor speed controls to meet today's varying production needs and anticipated future needs.

The combination loading-unloading zone is 68 feet long, giving ample work area for handling the fabricated products. Steel hooks and clamps are designed to secure the large boxes and their attached doors for steady travel along the overhead continuous monorail conveyor. Small parts, such as outlet boxes, are mounted on racks, as many as 16 per rack, for suspension on the conveyor.

Speed of the conveyor is readily adjustable from 3 to 9 feet per minute, depending on the spraying time required and the time-per-piece required in the bake oven. For example, speed of the panel enclosures shown in the photo is 5 feet per minute.



Flow diagram of finishing system at Hoffman. Conveyor is 620 feet long and may be run from 3 to 9 fpm.

While washer controls and bake oven controls are located near their respective units, the conveyor controls are located at the first spray booth giving this operator complete control of the system.

Three-stage metal preparation

The metal preparation system utilizes a 3-stage washer 45 feet long — (1) cleaning and phosphatizing, (2) plain water rinse, and (3) chromic acid final hot rinse, with adequate drain facilities following each rinse.

Provision was made in laying out the system to conveniently expand the washer to 5 stages when desired to meet future requirements.

From the washer, products travel into the dry-off oven. This unit, 38 feet long, may be operated at any desired temperature up to 450° F. to assure proper drying of parts.

By the time parts reach the first spray booth, they are sufficiently cooled for immediate painting.

Two 10-foot water-wall spray booths are used in the system. As shown on the flow diagram, the booths face in opposite directions. The two booths installed in opposite directions make it easy for two men, one in each booth, to paint both sides of large products such as the panel enclosures.

Various conventional primer and finish coat paints may be applied interchangeably in the booths. A week's production of one product involving one

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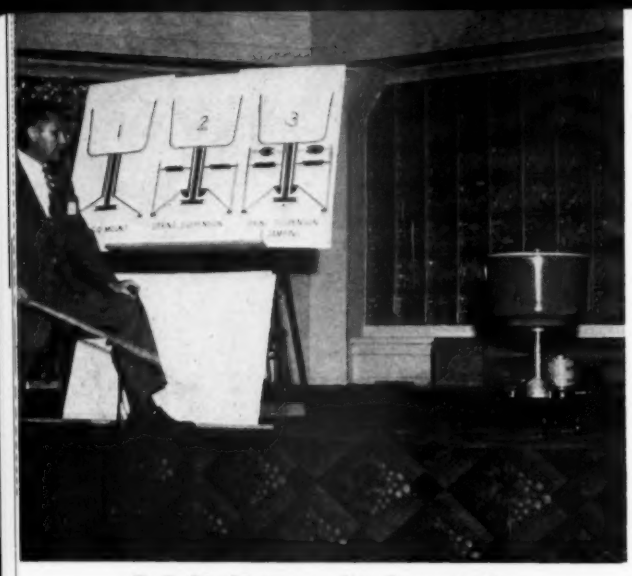
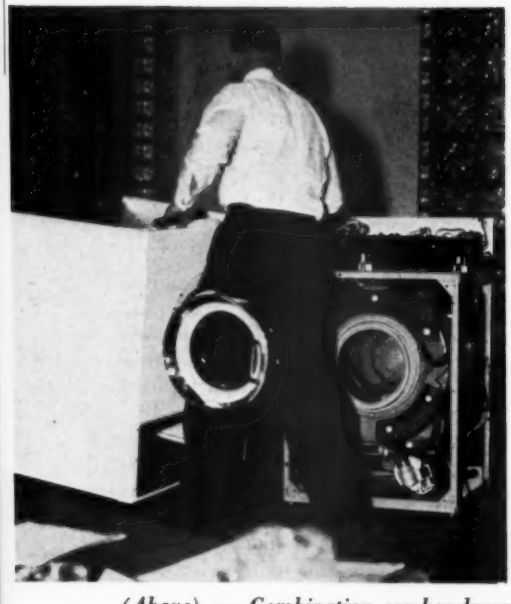


E. G. Lipski stages a live demonstration with a specially-built laboratory tub and motor unit. The demonstration model could be controlled to spin with a rigid mount, spring mount only, and with spring and damper arrangements.



(Above) — Combination washer-dryer being dismantled in seconds to demonstrate easy accessibility of components for servicing.

(Below) — C. E. Ruelle, service manager, Hamilton Mfg. Co., Two Rivers, Wis., chairmanned the parts and service conference.

Service is big business— $16 billion a year

6th annual AHLMA parts and service conference enjoys largest registration

AN MPM STAFF REPORT-MPM PHOTOS

THE BEST ATTENDED AHLMA-sponsored parts and service conference held to date was composed of an enthusiastic group of regular and associate American Home Laundry Manufacturers' Association members, guests, and press representatives. Held at the Edgewater Beach Hotel, Chicago, September 25, the attendance surpassed last year's total.

The one-day session was chairmanned by C. E. Ruelle, service manager, Hamilton Mfg. Co., Two Rivers, Wis.

Speakers at the conference included Victor Petchul, *Appliance Manufacturer* (an historical review); Elizabeth Sweeney Herbert, *McCall's* (the housewives' viewpoint); Mort Farr, Mort Farr, Inc. (the dealer viewpoint); Stewart MacDonald, Maytag-Gray, Inc. (the distributor); R. S. Geran, Kelvinator (service as a business); E. G. Lipski, Philco (engineering aspects); Jack D. Lee, Westinghouse (pilot models); and J. H. Miller, General Electric (a summary).

Housewives' viewpoint given

Elizabeth Sweeney Herbert, household equipment editor of *McCall's* magazine, centered her remarks on two recent projects of *McCall's* magazine. One of these was the Congress on Better Living, held by *McCall's* with one hundred specially-picked young housewives from all parts of the country to discuss all phases of home life, including appliances. The other project was the one which was being compiled at the time of this meeting; a survey on home laundry equipment from a selected cross section of their subscribers.

Mrs. Herbert explained that, as a result of the Congress on Better Living, *McCall's* decided to conduct a survey on home laundry equipment. Questionnaires totaling 2,603 were returned out of 5,000 mailed. The 5,000 subscribers were selected on the basis of a national probability sampling of their subscriber list. Some of the interesting figures mentioned by Mrs. Herbert were that 61 per cent of those that returned their questionnaires had automatic washers, 2.6 per cent had combination washer-dryers, 32 per cent had conventional washers, and 29 per cent had dryers. Of those returning the questionnaire, 15 per cent desired combination washer-dryers, 38 per cent wanted an automatic washer, and 42 per cent of the women wanted dryers. It was interesting to note, Mrs. Herbert continued, that most of the women desired to have the same brand of appliance presently owned.

Mrs. Herbert said that today's younger homemakers take their appliances for granted more than their mothers did or ever could. Most women feel no resentment toward appliances because they are complicated or subject to mechanical failings. Rather, they feel that they are tools to be used to raise their standard of living from that of a "maid" to that of housekeeper.

An interesting comment heard by Mrs. Herbert from the Home Living Conference was that the dryer was the biggest boon in the entire household.

From the standpoint of service, most women resented the *time* needed for servicing home laundry equipment, Mrs. Herbert reported. However, very few women lacked the knowledge of how much service costs, and were also well aware of the fact that charging a fair price for service is a necessity.

Of the women polled in the survey, 55 per cent had laundry equipment that was less than two years old, and 73 per

cent had laundry equipment that was less than five years old. The feature that these women indicated they wanted most was the lint filter. Other features desired were two cycles for washing; a fast and slow speed.

Mrs. Herbert felt that the reasons for a recession in 1958, as far as the home laundry industry is concerned, go deeper than the reasons on the surface would indicate. She said consumers today are sharper traders, and that they recognize and want quality and good, usable features more than ever before.

In summing up, Mrs. Herbert said to the manufacturers present, "You're in. Just prove you should stay there."

Dealer viewpoint on selling and appliance warranties

Mort Farr, of Mort Farr, Inc., Philadelphia appliance dealer, began his remarks by observing that the home laundry industry is not closely enough knit to promote the sale of home laundry equipment. The area for greatest development, he feels, is in dryers and ironers. He feels that the industry still has to sell women on using a dryer. He said that women are notoriously slow in accepting new methods of doing things. This is not so true with the younger women, but the need for promotion there is still great.

In continuing his comments on the industry, Farr said he couldn't understand why appliance manufacturers don't emphasize ironers more. He feels that ironing is the hardest job there is for a woman.

On guarantees, Farr said that the industry should go to a 90-day warranty and put the difference into the machines. One of the problems the dealer is continually facing is that salesmen tell the customer the appliance is guaranteed for five years. The trouble with this length of guarantee is that the customer feels that after five years are up he should get a replacement or across-the-board adjustment on anything that goes wrong. He said that no other hard goods manufacturer has anywhere near a five-year guarantee.

It is his feeling that yearly models are certainly not needed. Manufacturers should weigh what is new and useful on a machine before introducing a new model, and certainly use that as a basis for bringing out a yearly model, if that is the company's policy.

He thinks that the reason combination washer-dryers are not selling as well as they should is that they were introduced prematurely, before "bugs" could be removed.

The most direct problems affecting service that face the industry, according to Farr, are poor installations, poor instruction, and service inaccessibility. He said that installations are often handled by a "couple of truck drivers" who take a minimum of time in connecting the appliance, and explaining its use to the homemaker. He feels that the industry will eventually have to go back to the old-fashioned home demonstration when an appliance is bought by a consumer. He thinks that the instruction booklet supplied now by appliance companies are very good, but that a larger supply should be made available to the dealer.

Warranty cards should not be in the instruction booklet, but should be separate and handled more impressively, so that the buyer regards the warranty more highly. Manufacturers, Farr continued, should tell the user what areas of service will require a fee.

Other points Farr brought up were that factory distributor salesmen should be fully instructed on every phase of operation and service, so that the salesmen, appliance dealers, and servicemen can be quickly trained with each change in the appliance. Summing up his remarks, he said that 80 per cent of the appliance dealers belonging to NARDA

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Retiring president Vicary (right) hands gavel to incoming president Smith. Mrs. Vicary is in foreground.

PORCELAIN ENAMEL INSTITUTE ANNUAL MEETING

Marketing— gets the spotlight

AN MPM STAFF REPORT

GENERAL SESSIONS ON MARKETING were the feature of the Porcelain Enamel Institute's 27th annual meeting, held at The Greenbrier Hotel, White Sulphur Springs, W. Va., September 25-27.

Featured speakers included Paul J. Lovewell, director of Stanford Research Institute's Division of Economic Research, who spoke on industrial research; Peter Muller-Munk, managing partner of the Pittsburgh firm which carries his name, who discussed industrial design as it relates to marketing; Peter E. Schruth, vice president and director of advertising, *Saturday Evening Post;* George Danforth, chairman of the Department of Architecture, Western Reserve University; and television star Fran Allison, Whirlpool Corporation. Chairman of the general sessions was C. S. LeCraw, Jr., U. S. Steel Corporation.

Temco man is new president

Robert N. Smith, vice president of Temco, Inc., Nashville, Tenn., was elected president of the PEI for a two-year term. He succeeds James W. Vicary, president of Ervite Corporation, Erie, Pa., who was elected chairman of the board.

Long active in PEI activities, Smith has served as a vice president of PEI, a member of the Finance Committee, and also Chairman of the Institute's Legal committee. He has held several positions with Temco, including secretary-treasurer, vice president and treasurer, and, at present, first vice president and treasurer.

Vice presidents elected were A. S. Ault, Chicago Vitreous Corp., Chicago, Ill.; W. H. Lowry, Vitreous Steel Products Co., Cleveland, O.; H. V. Penton, California Metal Enameling Co., Los Angeles, Calif,; and H. A. Ringelberg, Challenge Stamping & Porcelain Co., Grand Haven, Mich.

P. B. McBride, Porcelain Metals Corp., Louisville, Ky., was re-elected treasurer. Glenn A. Hutt, Ferro Corp.. Cleveland, Ohio, assumes the position and duties of immediate past president. John C. Oliver, Washington, D. C., was re-elected managing director ana secretary of the association.

Elected from the board of trustees to serve with the officers on the executive committee were: C. S. LeCraw, Jr., U. S. Steel Corp., Pittsburgh, Pa.; H. McE. Patton, Ingram-Richardson Mfg. Co., Beaver Falls, Pa.; W. T. Porter, Porcelain Metals Corp., Louisville, Ky.; H. R. Spencer, Jr., The Erie Enameling Co., Erie, Pa.; R. H. Stegeman, Barrows Porcelain Enamel Corp., Cincinnati, Ohio; and J. C. Winget, Armco Steel Corp., Middletown, Ohio.

Garage to fit the car

Industrial designer Peter Muller-Munk had this to say concerning the present marketing problem.

"Something has gone wrong with that spendthrift show-off, the American consumer. He no longer agrees that the garage should fit the car. He shows no shame at living two years in succession with the same double-duty, super-automatic, royal deluxe, combination refrigerator-freezer, and he takes his physical exercise by continuing to open cans with an old-fashioned, hand-operated gadget instead of installing a patently much superior, push-button operated, electronic machine with a built-in IBM calculator, easily available at his favorite discount house. Obviously, these are pretty serious signs of disease and of mental disturbance, particularly shocking if, as in many cases, the patient still has ample money in the bank to buy what he doesn't need but what we decided he should have."

In continuing, he said, "I believe that industry's problem is not so much to

(Lower left) — Left to right: retiring president J. W. Vicary with speakers Paul J. Lovewell, Peter Muller-Munk, Fran Allison, George Danforth, Peter E. Schruth, and general sessions chairman C. S. LeCraw, Jr. (Lower right) — Board of trustees of the Porcelain Enamel Institute.

find out what ails the consumer, but to face what's wrong with us and with our products. Without wanting to belittle the importance of how to sell, I maintain that we must start with a reappraisal of *what* to sell."

In outlining the objectives of industrial design, Muller-Munk said, "I hope you will believe . . . that industrial design is not concerned with arbitrary obsolescence or streamlining, but that it is a professional service which closes the gap between what the consumer wants and needs and the means of industry to satisfy him. . . . "

An architect dramatizes publicity

Architect George Danforth presented a dramatic demonstration of the effectiveness of proper planning in the development of favorable publicity. His demonstration was centered around a film covering the U. S. Steel sponsored "Chicago Dynamic" program, which resulted in Chicago Dynamic Week during October of '57.

"Everybody knows the role advertising plays in informing a market about a product or an idea," Danforth said. "To a degree, advertising can go beyond an informational role toward what one authority called 'creating a favorable image' of a *product*, a *company* or an *idea* in the public's mind.

"But what *really* turns the trick here is *publicity*, he continued. "Favorable articles, reports or mentions in the editorial columns of newspapers, magazines, trade papers — and on radio and television — will do *more* to make the public *want a product, stand behind an individual,* or *believe in an idea* than will almost any amount of bought advertising space or time.

General program chairman LeCraw with feature speaker Fran Allison at PEI *meeting.* MPM PHOTO

Referring specifically to metal curtain wall construction, Danforth said that it has almost literally given America a new look over the past ten or twelve years. He stated, however, that a tremendous job of educating and selling needs to be done for the following reasons: "*architects* are unaware of many new curtain wall materials and applications; *fabricators* are still struggling with new materials and new specifications; and *business men,* who have been commissioning and paying for new buildings at a rate almost unprecedented in our history, don't know the basic difference between a curtain wall and a stone wall."

In relating publicity and marketing to the construction field, Danforth said, "I have come to have the feeling that too much marketing is done in cart-before-the-horse fashion — that, in too many instances, the *acts* of marketing and selling are performed first while the *planning* of marketing and selling is done later — if at all.

"Second, I feel that many marketers in the modern construction field are *much too concerned with competitive selling* — which is *only part* of their problem. If *less* effort were expended on competitive selling and *more* were given to promoting the *idea* of good, modern curtain wall building to architects, engineers and business men, it seems to me that the entire field — *as well as architects, engineers and business men* — would profit."

In covering his subject, "Industrial research as it relates to marketing," Lovewell of Stanford Research Institute stated, "Blind acceptance of research as a cure-all to marketing problems is the last thing research firms want to see. More and more, reputable research organizations feel the responsibility — not of 'selling' research — but of making sure clients buy only research they need and are in a position to use."

Fran Allison, popular radio and T-V star, who helps Whirlpool sell home appliances on T-V, gave the meeting a few good pointers on sales promotion and service. A separate report on the Allison message appears in this issue.

University of Illinois — **November 5, 6, 7, 1958**

ADVANCE PROGRAM

20th Annual PEI Shop Practice Forum — Urbana, Illinois

WEDNESDAY, NOVEMBER 5, 1958

Morning Session

10:00 A.M. REGISTRATION
10:30 A.M. COMMITTEE MEETINGS
12:00 Noon LUNCHEON

Afternoon Session

1:30 P.M. ADDRESS OF WELCOME
University of Illinois Official
1:45 P.M. RESPONSE
PEI Official
2:00 P.M. BASE METALS FOR PORCELAIN ENAMELING
- Manufacture of Sheet Steel for Porcelain Enameling
P. A. REYNOLDS, U. S. Steel Corp.
- Sag Characteristics of Steel vs. Temperature
R. F. PATRICK, Pemco Corp.
- Resistance-Welding Characteristics of Sheet Steel
G. E. GROTKE AND W. D. DOTY, U. S. Steel Corp.

2:45 P.M. DISCUSSION SESSION ON BASE METALS
3:15 P.M. INTERMISSION
3:30 P.M. SYMPOSIUM ON METAL PREPARATION
- Spray Phosphoric Acid Pickling
H. J. McVEY, Parker Rust Proof Co.
- Pickling Procedures — Adjustments for Various Soils

4:00 P.M. DISCUSSION SESSION ON METAL PREPARATION
4:30 P.M. ADJOURNMENT

THURSDAY, NOVEMBER 6, 1958

Morning Session

9:30 A.M. TESTS AND SPECIFICATIONS
- Test for Dry Draw Application
D. B. TOLLY AND J. A. SCHIEFFERLE, General Electric Co.
- Loaded Beam Stress Measurement
D. C. BOWMAN, Chicago Vitreous Corp.
- Standardization of Coating Thickness Gauges
Speaker to be Announced
- Fine Milling and Tests
Speaker to be Announced
- New Type Bozsin Box
M. BOZSIN, Ferro Corp.

10:30 A.M. INTERMISSION (20-Minute Coffee Break)
- Metallography of Porcelain Enameled Steel
H. L. CONAWAY, U. S. Steel Corp.
- Commercial Standard on Porcelain Enameled (Glass-Lined) Tanks for Domestic Hot Water Service
Speaker to be Announced
- Using the IBM 804 Computer to Reduce Weathering Test Data
ALAN POTTER, Porcelain Enamel Institute

11:30 A.M. DISCUSSION ON TESTS AND SPECIFICATIONS
12:00 Noon ADJOURNMENT
12:05 P.M. GROUP PHOTOGRAPH
12:15 P.M. GROUP LUNCHEON

Afternoon Session

1:30 P.M. SYMPOSIUM ON ARCHITECHURAL PORCELAIN ENAMEL
- Oxides and Architectural Colors
WESLEY REYNOLDS, Erie Enameling Co.
- Curtain Wall Construction
G. O. JOHNSON, U.S. Steel Corp.
- Adhesives for Laminated Panels
GEORGE J. SCHULTE, Minnesota Mining and Mfg. Co.
- Growth of Aluminum During Porcelain Enameling
A. L. SOPP, JR., Aluminum Co. of America
- Production of Architectural Parts — Conforming to PEI Specifications
RUSH S. DALE, Ervite Corp.

2:30 P.M. DISCUSSION ON ARCHITECTURAL PORCELAIN ENAMEL
3:00 P.M. INTERMISSION
3:15 P.M. COST FACTORS IN SHOP OPERATIONS
- Some Observations on the Affect of Automation on Cost Reduction
A. KARRER, General Electric Co.
- Additional Paper: Title and Speaker to be Announced

3:45 P.M. DISCUSSION ON COST FACTORS
4:15 P.M. ADJOURNMENT
6:30 P.M. RECEPTION AND ANNUAL FORUM BANQUET, URBANA-LINCOLN HOTEL

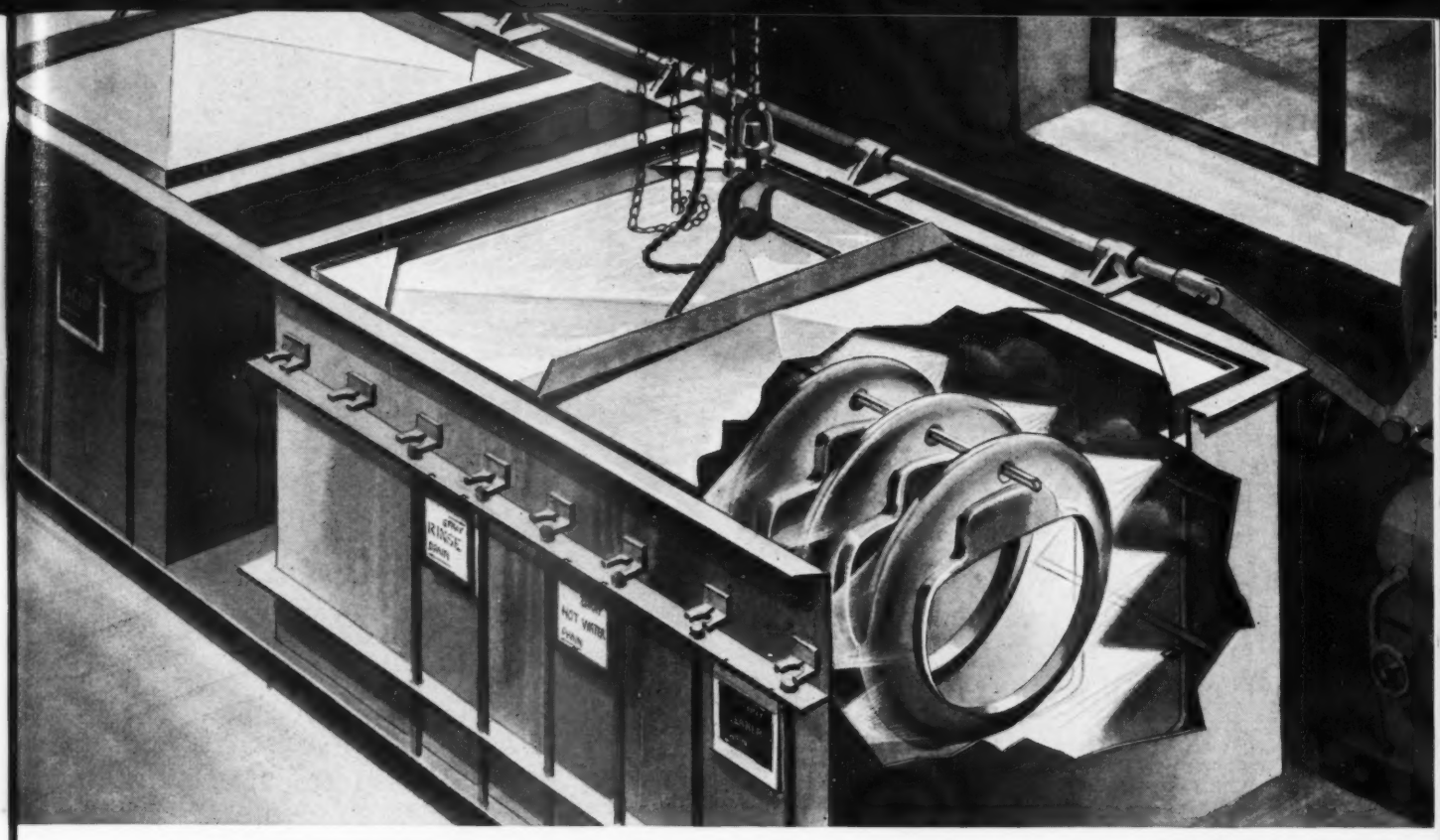
FRIDAY, NOVEMBER 7, 1958

Morning Session

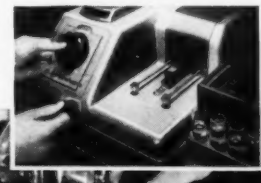
9:30 A.M. GENERAL INTEREST SYMPOSIUM
- Evaluation and Practical Uses of 1400°F. Porcelain Enamels
H. R. SPIERS, Pemco Corp.
- Electrical Properties of Porcelain Enamels
C. G. BERGERON, University of Illinois
- Sonic Sifting
C. E. MEGINNIS, NoVo - Div. of Industrial Enterprises, Inc.
- Infra-Red Drying
PAUL THOMPSON, Whirlpool Corp.
- Repairing and Reoperating Porcelain Enamel Rejects
JACOB H. FORWITH, Westinghouse Electric Corp.

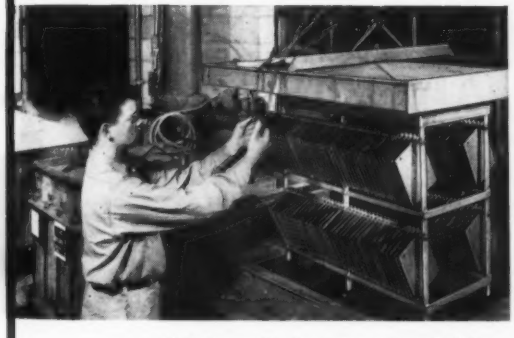
10:30 A.M. INTERMISSION
- Trends in Ceramic Education
R. M. KING, The Ohio State University
- Ceramic Adhesives
H. G. LeFORT, University of Illinois
- Factors Affecting the Tinting Efficiency of Gold Oxide
E. E. BRYANT, JR., Whirlpool Corp.
- Thirty-Second Ideas
J. J. SVEC, Ceramic Industry Magazine

11:30 A.M. GENERAL INTEREST DISCUSSION
12:00 Noon ADJOURNMENT

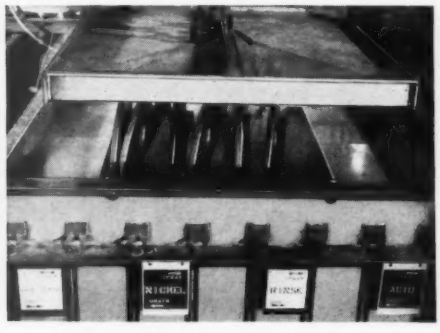


New developments in spray pickling are well along in the pilot-plant stage at Ferro's Porcelain enamel "lab" in Cleveland. Here actual production conditions are duplicated and every phase of the operation studied. Here highly significant results are being obtained, results promising an early "break through" in producing better, lower cost enameling.

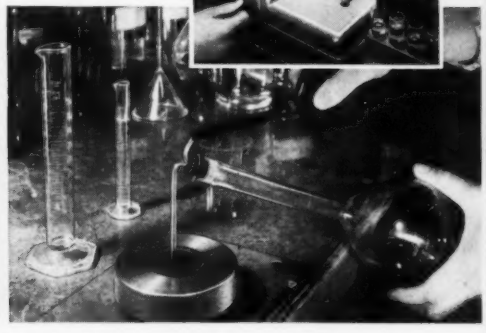




Metal samples in racks, suspended from interchangeable tank covers, are cleaned and rinsed in the first tank under controlled conditions. Fabricated parts up to 24" x 24" x 30" in size can be handled.



Pickling and etching are done in the second tank. Both the nickel solution and acid are recirculated, with the high-cost acids passing through the ion exchanger (in background of photo at left).



Standard laboratory tests are made following each pickling experiment. Variables such as iron removal, iron content of solutions and nickel deposition are studied as they affect quality of the finish.

SPRAY PICKLING...

another step toward better enameling?

FERRO

A revolution is taking place in Porcelain enameling. The process is becoming more and more mechanized, more trouble-free—ever *better*, yet often lower in applied cost.

And still thinner coatings are on the way. Lower firing temperatures, too! Even cover coats *direct on steel*, in white and pastel colors! In all of these, metal preparation is of prime importance—hence Ferro's interest and extensive program to find answers here for *you*.

All methods of metal preparation are under continuous study at Ferro, in the *industry's first complete laboratory facility* simulating plant conditions. Out of such efforts *today* will come better Porcelain enameling *tomorrow*.

FERRO CORPORATION 4150 EAST 56TH ST. • CLEVELAND 5, OHIO

MAC CHEM 1-2 CLEANING PROCESS for ENAMELING

for High Quality PORCELAIN ENAMELING

IT'S A HIGH SPEED CLEANING PROCESS THAT CLEANS SO IT STAYS CLEAN

In enameling, there's nothing so costly and disheartening as rejects. If you are faced with this difficulty—due to unclean metal parts—Mac Chem 1-2 Enameling-Cleaning Process can be of an infinite help.

While we do not claim that Macco Cleaner and Cleaning Process will entirely eliminate all rejects, we do maintain they will reduce them to minimum.

1 **Mac Clean No. 20 is a Heavy Duty Cleaner specifically designed to remove all special enameling drawing compounds, etc. It is a fast, easy-to-use, economical cleaner — non-toxic, non-corrosive, and non-injurious to metals.**

2 **Mac Chem No. 30 is a Second Step, Light Duty Cleaner which removes all residue from the cleaner baths, leaving the metal so chemically clean that it stays clean and readily accepts acid pickle and nickel.**

FOR QUICK RESULTS

Write or phone Macco today and have a Macco engineer make a demonstration in your plant. No obligation, of course.

This 2-Stage Metal Cleaning System is serving some of the country's largest porcelain enameling plants. Can be used with equal effectiveness in both automatic and batch type equipment.

MACCO PRODUCTS COMPANY

Manufacturers of Better Metal-Working Compounds since 1931

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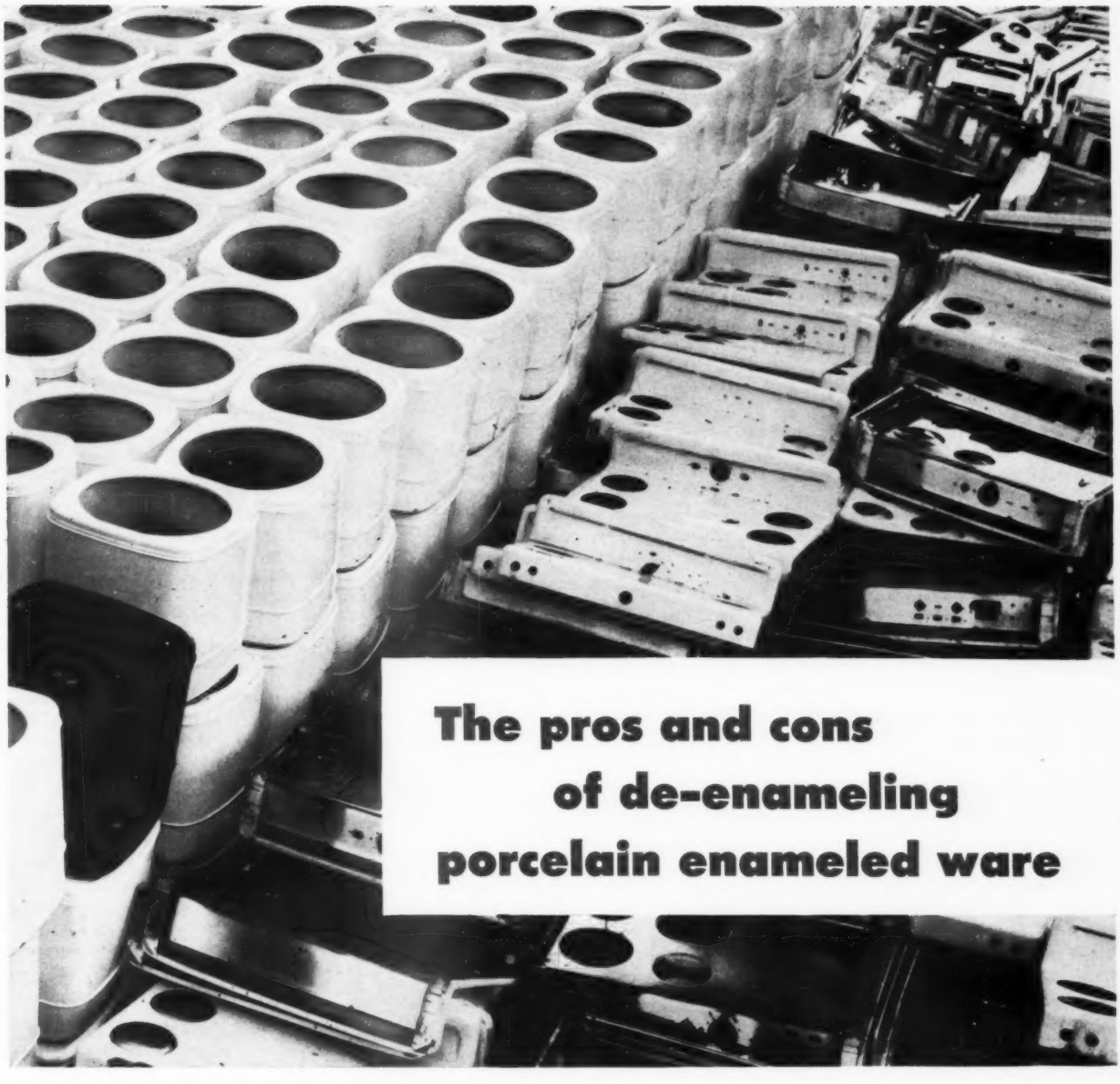


The pros and cons of de-enameling porcelain enameled ware

AN MPM STAFF FEATURE

ILLUSTRATIONS COURTESY NEW PROCESS D-ENAMELING CORP.

MPM EXCLUSIVE FEATURE

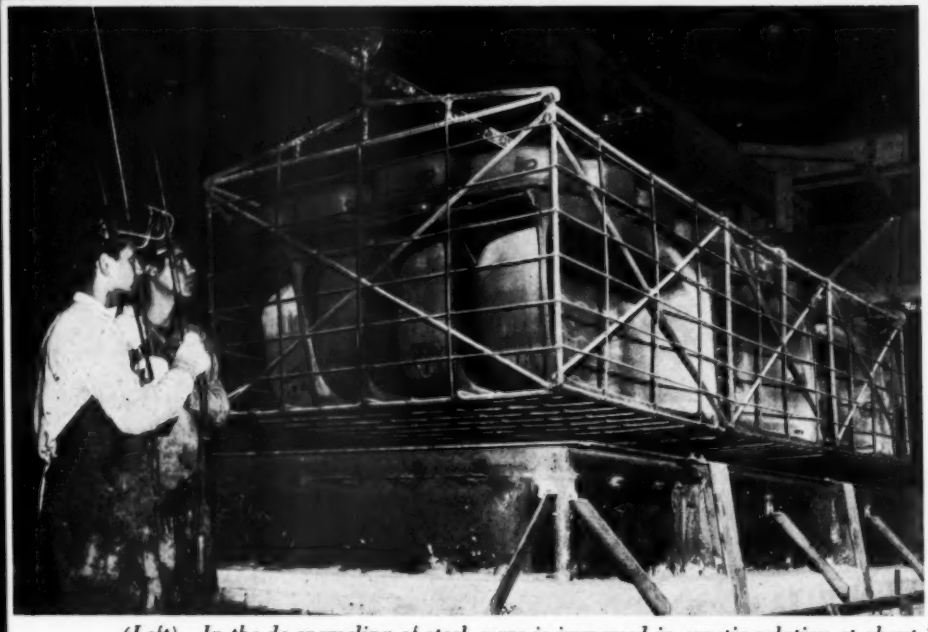
It is not the purpose of this article to discuss materials and processes related to de-enameling of porcelain enameled metal. Instead, it is the purpose to discuss the advantages and disadvantages of establishing de-enameling facilities or using commercial de-enameling services.

It might be easy to say that if a percentage of porcelain enameled ware that is normally going into the classification of scrap can be saved economically by de-enameling, then this would most naturally be a real saving in dollars and cents to any company with a porcelain enameling plant. This, however, is an over-simplification of the problem, as can be attested by those companies who have investigated the process.

It has long since been established in the minds of most enamelers that as a rule-of-thumb standard, flat shapes and parts with relatively small fabricating cost involved in the finished part should not be considered as logical for de-enameling. On the other hand, there are many complicated shapes which, under proper conditions, can be de-enameled at a real saving, compared to the cost for steel and fabricating a new part.

An unpopular process

It can be said that, in general, most enamelers and plant management men are averse to installing de-enameling facilities in connection with their own porcelain enameling plant. This relates to the type of material that is required for chemical de-enameling and the somewhat hazardous working conditions



(Left)—In the de-enameling of steel, ware is immersed in caustic solution at about 300° F. in specially-designed tanks. About 90 per cent of the enamel is removed in two hours by this process. (Right) — Residue enamel, left on the part after immersion in caustic solution and thorough washing, is removed by sand spray at 30 pounds pressure.

for those operating the process. There is also the feeling among some plant operators that the installation of a de-enameling facility has a bad psychological effect on production men in the porcelain enameling plant, in that there is a feeling that instead of re-working parts to meet inspection standards, it is simpler to pass them as scrap and turn them over to de-enameling.

These objections have been overcome to a great extent in recent years as independent de-enameling services have been established on a commercial basis to serve porcelain enameling plants and product manufacturers.

When the commercial de-enameler is being considered, then quite obviously the question reverts to one of dollars and cents.

A management problem

It is reported as relatively simple to sell management on the use of de-enameling services for complicated parts, because it is a definite cost reduction. However, after management has been sold, it is then possible for it to defeat its own purpose under certain circumstances of reports and bookkeeping.

For example, if 1,000 fabricated parts go into the enameling department from fabrication, and only 940 finished, enameled parts are completed for assembly, it may be that the difference of 60 parts is represented by enameled ware classed as scrap or "shrinkage," and that these end up in the plant's scrap pile.

Now let's assume that this same company decides to de-enamel these parts, or have them de-enameled by a commercial concern. The 60 parts are sent out for de-enameling, and when they are returned, a charge comes in for the de-enameling service. Instead of a credit being shown to the enameling department for the reclaimed ware, a new charge is likely to come before plant management as something that has not heretofore been considered, and therefore it appears to be an added cost to production.

Case histories indicate that management may call the enameler before him, put him on the spot, and say, "Why do we have so much of this de-enameling?" The chances are that plant management has more or less taken for granted the scrap loss, which is evident in every porcelain enameling plant, but when he gets charged for "saving" some of the scrap work, it's painful.

Psychologically, it seems natural that some enamelers would say, "Well, de-enameling is no good. It doesn't work." Or he just doesn't send additional ware for de-enameling, because it is more comfortable to handle the work in the manner which was heretofore considered standard, and does not attract the attention of his plant management.

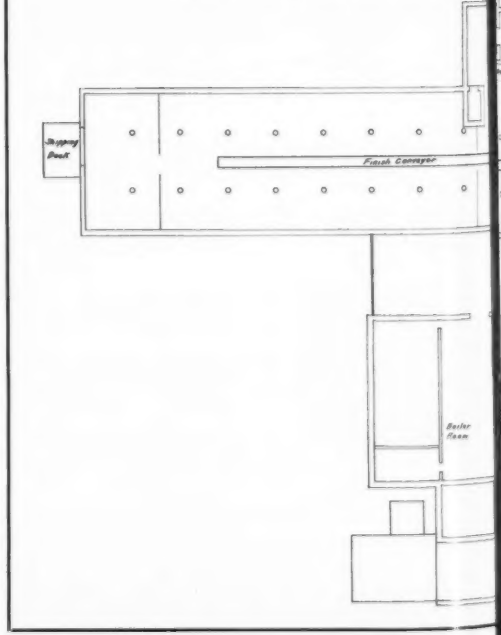
Therefore it would seem that where de-enameling is to be used successfully, it is first up to management to realize that the scrap going out the back door costs money, and if the enameler, through the use of proper de-enameling facilities, can save at least part of this money for the company, it should be to the credit of his department, and not a discredit.

A theoretical case history

To describe the practical application of de-enamleing in dollars and cents, we will establish a theoretical case history on a run of 10,000 fabricated parts, which we will assume are sufficiently complicated in design to warrant their consideration for de-enameling.

Now the 600 parts are sent out for de-enameling. De-enameling cost is $1.50, plus an estimated $.50 for transportation and in-plant labor cost for metal finishing touch-up prior to re-en-

Typical Layout for a P



	Quantity	Fabricating Value Per Unit	Enameling Value	Total Value
Parts checked out by fabrication	10,000	$3.75		$37,500
Parts okayed after porcelain enameling	9,400			
Initial scrap parts	600	$3.75	$1.50	$ 3,150

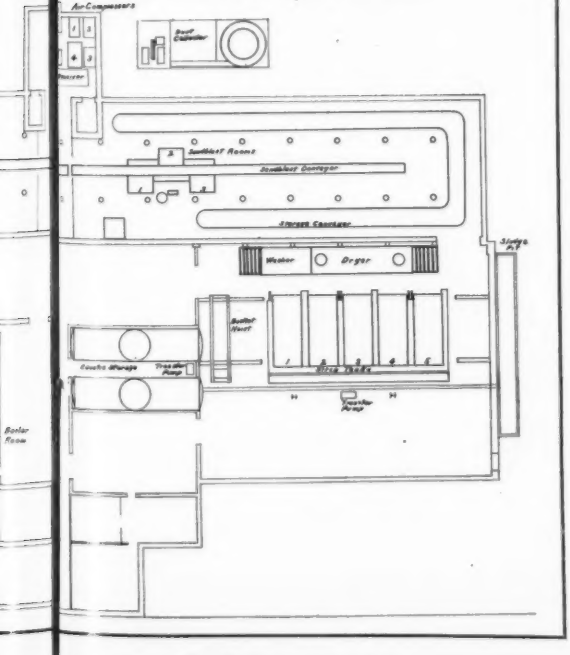
These 600 parts classed as scrap would normally go into an overhead account — SCRAP.

ameling, total cost of $1,200. The investment in the parts saved (de-enameling, $1.50 per unit, plus transportation and incidental work, $.50 per unit) is $1,200. Assuming that 600 good parts go back in at the original value of $3.75 each, or a total of $2,250, this leaves the scrap department with a net return to the scrap account of $1,050, which at least in theory was saved by the porcelain enameling division by sending parts for de-enameling instead of to the scrap heap.

In shop language, this means an overall reduction in scrap percentage from 6 per cent to .36 per cent (assuming a loss of 6 per cent of the de-enameled parts), and a 33-per cent reduction in scrap dollars. At the rate of 1,000 ranges a day, this would amount to approximately $25,000 a year savings.

This then becomes a matter of company policy on handling of departmental records and bookkeeping, as to whether the $1,050 becomes a favorable factor in the picture for the porcelain enameling plant, or whether it shows as an outside out-of-pocket cost that was not formerly considered, prior to de-enameling.

a Production De-enameling Plant



Parts suitable for de-enameling

Some of the parts which are normally considered suitable for de-enameling on a practical basis are stove tops, washer tops, dryer tops, steel sanitary ware, back splashers on stoves, and other similar complicated parts. If we establish 6 per cent as an arbitrary scrap figure for this class of ware, it may be considered that a reasonable saving can be made by considering de-enameling.

There is another theoretical case example. Let us consider a 60-inch bathtub, with an estimated raw shape value of $15.00.

Estimated value of raw shape		$15.00
Estimated cost of enameling		10.00
Total value enameled steel shape		25.00
Estimated de-enameling cost	$6.25	
Cost for metal finishing, straightening flanges, removal of dents, etc., following de-enameling	1.00	
Transportation	1.00	
Total	$8.25	
Value of raw shape		$15.00
Cost of de-enameling, etc.		8.25
Saving per unit on de-enameled raw shape compared to cost of new fabricated part		$ 6.75

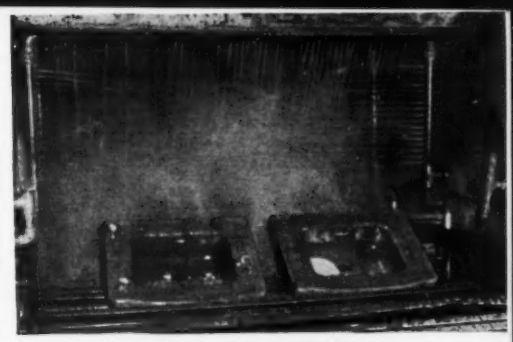
How about re-enameling?

There is always the question of whether a de-enameled part can be re-enameled as effectively as the original raw steel shape. This, of course, goes back to the effectiveness of the de-enameling process. Commercial de-enamelers state that their customers have been able to get equal quality with no greater percentage of enamel rejects with de-enameled parts as with the original stamping.

It goes without saying that the de-enameling process itself has been greatly improved during recent years, and the cost of de-enameling has likewise been greatly reduced. One commercial de-enameling concern estimates that de-enameling costs have been reduced 30 per cent in the last ten years. One part, for instance, with a fabricated shape value of $15.00 formerly cost $8.00 for de-enameling, and now is down to $6.25.

Do's and dont's

If de-enameling is established as a new process or service for a plant, then



Parts are washed to remove all traces of caustic solution remaining from the initial immersion. Spray rinse machine is completely mechanized.

it is necessary that management and plant management first recognize that scrap losses are normal in every porcelain enameling plant, and that their desire is to salvage as many parts as are feasible through de-enameling.

It is essential that the inspectors in the porcelain enameling division be trained to mark parts for scrap *only* after the possibilities for reclaiming have been exhausted.

All parts marked for scrap for de-enameling should be identified, if possible. One method of doing this is to punch or notch a concealed flange. This will prevent parts from "running around in circles" as far as de-enameling is concerned, for most enamelers would suggest that after a part has been de-enameled once, it should never go back to de-enameling a second time, but should be relegated to the final scrap heap.

If you use the service

The accompanying table headed "appliance parts" gives a rough measure for the type of products which should and should not be considered for de-enameling.

Once it has been determined, as a matter of policy, that de-enameling service will be used, it would be well for management to call a meeting of key men in fabricating and porcelain enameling and explain the advantages that can accrue to the company *if* the service is used for one purpose only, and that is to reclaim scrap enameled parts that could not logically be saved in the enamel plant itself.

Appliance Parts

COMPLICATED TOPS (16 & 18 GA.) COMPARED TO FLAT FLANGED PANELS (20 & 22 GA.)

	Value of Fabricated Part	Cost of Enameling	Cost of De-enameling	Transportation & other cost	Saving
Complicated part	$3.75	$1.50	$1.50	$.50	$1.75
Flat part	.95	.90	.70	.25	.00*

*(Only obsolete pieces or something requiring die setup or greater cost to replace would pay.) Add "Cost of De-enameling" to "Transportation & other cost," and deduct from "Value of Fabricated Part," to get "Saving."

"WEIRKOTE'S® ZINC COATING STAYS SKINTIGHT. NO PEELING OR FLAKING—CAN ELIMINATE DIPPING OR PLATING AFTER FABRICATION!"

Q. Sure, but what happens on the tough jobs—like deep drawing or crimping?

A. You can work Weirkote right to the limit of the steel itself. And as I said, no peeling or flaking.

Q. Then where's the miracle? We tried galvanized before. And it struck out. Too much trouble, too much cost fixing it up after fabrication.

A. No miracle. It's just that Weirkote's made by the continuous process which integrates zinc and steel so that the toughest fabrication won't break down the bond.

Q. That means then that Weirkote can eliminate the need for plating or dipping to assure uniform corrosion protection for the most intricate part . . . is that the picture?

A. Yes, that's exactly the picture . . . and besides, Weirkote is now treated to inhibit wet storage (white oxide) stain.

Send today for free booklet that details the time- and cost-saving advantages of using skintight zinc-coated Weirkote. Write Weirton Steel Company, Dept. R-8, Weirton, West Virginia.

WEIRTON STEEL COMPANY

WEIRTON, WEST VIRGINIA

a division of

NATIONAL STEEL CORPORATION

Aunt Fanny speaks out on sales and service

marketing strategy has been short on "buying reasons" data—poor service can short-stop sales promotion and unsell a multiple product brand name

EXCLUSIVE MPM PHOTO

SPEAKING BEFORE A GROUP of businessmen and manufacturers at a recent meeting at White Sulphur Springs, W. Va., the lovable Aunt Fanny of radio fame, (Don McNeil's Breakfast Club) Fran Allison, star of television commercials (RCA-Whirlpool), spoke her piece on the subject of Sales Promotion and SERVICE and their relation to the marketing of home appliances.

Said popular Fran Allison (Aunt Fanny): "Today's marketing concept in American industry has brought into sharp focus the function that sales promotion must perform in the overall sales-marketing program. . . .

"Market research and advertising must work closely with sales promotion to prepare and present sales programs that will ensure the desired objectives.

The human factors in selling

"In the race to achieve higher production and better productivity, constant attention has been given, and millions spent, in improving the methods and machines that produce goods. But by comparison, very little attention has been paid and very little money spent in finding out how to get these products consumed. Very little time has been allotted to finding out more about the basic factors and the human factors that cause people to buy. American industry has *manufacturing know-how.* The problem seems to be how to have high sales *turnover* with very little or no *left-over.* . . .

"If a survey had been made 60 years ago of what people wanted in the way of illumination for their homes and we had followed the results of that survey, this nation, today, would probably be the largest users of kerosene lamps in the world. It is historically correct that the pioneer companies in the field of electricity had a hard job convincing the buying public that they should have electricity installed. In today's market, and with today's selling methods, with the millions upon millions of dollars spent for advertising, an innovation such as electricity would have become successful overnight. . . .

"The sales promotion program must change buyers' attitudes. It must change the buyer from *thinking* about this purchase to *wanting* to purchase, and then it must transform the want to a need.

Don't forget profit

"Sufficient market analysis and data must be made available to sales promotion to predetermine 'Market Area' strategy. What is good merchandising for Hartford, Conn., may become a complete failure in Greensboro, N. Carolina. While sales promotion programs should create buyers for products, they must not be so expensive that the necessary profit results are not achieved, and I believe it is the rare problem in selling that consistent good profit could not cure.

Poor service can short-stop your sales promotion

"I should point out here that in the case of appliances, that no matter how good the sales promotion, or how outstanding the product, the manufacturer depends upon the service organization to strengthen customer relations, to build good will and make the sales promotion program a *continuing success* insofar as the *consumer* is *concerned.* Appliance manufacturers are quick to point out to the buying public the outstanding features of their products, but no matter how outstanding the product, when there is a malfunction Mrs. Homemaker needs service and needs it promptly. Mechanically, appliances can be perfect, but Mrs. Homemaker suffers from human failure and when she needs appliance service — she needs it quickly. If she does not get prompt and gracious attention, she may be completely unsold forever on that brand of product. The 'Best deal' and 'Best price' will mean absolutely nothing to her the next time she is 'needing' a new appliance.

"Poor service on products can short-stop your sales promotion programs. Service representatives should be experts, and they should take the time and have the patience to explain. The homemaker should know exactly how to use her appliance. She is usually NOT AN ENGINEER or a MECHANIC and does not pretend to be. Therefore, PROPER INSTRUCTION can prevent the old familiar complaint, 'THIS THING NEVER HAS BEEN RIGHT.'

"Instruction booklets can hardly take the place of personalized instruction. All of the 'wonder-soft agitation' of a washing machine and the 'even heat' of an oven is lost with statements such as 'Turn dial *A* to position C' or 'Place a match over the aperture and turn counter-clockwise.'

"By now, *most homemakers* are *completely lost!* Personalized instruction is good sales promotion, and good service is a continuance of sales promotion."

Seven requirements for a successful sales promotion program

1. The problem identified and the goal defined.
2. Standards of accomplishment set up and understood.
3. The program must be within the established principles and policies of the organization.
4. Provision made for all physical factors needed to accomplish the job.
5. Adequate information regarding the probable effect of the program upon competition and existing customers or suppliers.
6. Requirements for special incentives needed for sales personnel or distributors or dealers?
7. And certainly all important, will it be profitable?

TITANOX* will brighten her life... when her hour to scour arrives. Thanks to the tough coating of titania porcelain enamel, based on TITANOX-TG titanium dioxide, her lovely new stove will clean up in a jiffy to reveal its original bright finish. And this finish is neither thick and heavy nor easily chipped. For the extreme opacity imparted by TITANOX-TG permits a film-thin coating that will withstand any experiment in cookery.

Because they are made exclusively for porcelain enamels, TITANOX-TG and TITANOX-TG-400 (the latter for blue-whites) are No. 1 choice in titanium dioxide for such finishes . . . not only for ranges, but for any fabricated metal product. These titanium dioxides provide easy working qualities—easy handling, storing and blending—and controlled uniformity of composition. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; offices and warehouses in principal cities.

TITANIUM PIGMENT CORPORATION

Subsidiary of **NATIONAL LEAD COMPANY**

*TITANOX is a registered trademark for the full line of titanium pigments offered by Titanium Pigment Corporation.

6102

Editor's Mail → *from Page 10*

believe it will continue to be a very useful reference and guide for us here at Newark.

Thank you for your kind attention to this matter.

Donald L. Pitman
Newark Stove Co.
Newark, Ohio

More about aluminum

In the mechanics of laying out a special sixteen-page feature such as "Porcelain enameled aluminum comes of age," which appeared in October MPM, there is always the chance of an error of omission. Such was the case in our last issue when a statement by William N. Noble was unwittingly omitted. His statement is printed here for MPM readers, and it will also appear with those of other executives in thousands of reprints of the feature which have been ordered by interested companies.

Quality must be guarded

The porcelain enameling of aluminum is still in its infancy, but it is an infant with "great expectations." Already it is a hit in the architectural field where its greatest future undoubtedly will lie for some time to come.

However, in spite of the fact that the use of aluminum in architecture and building construction has increased very rapidly in recent years, it still has a long way to go. Certainly, increased usage of porcelain enameled aluminum will result in its greater popularity. This, in turn, should bring about further acceptance and demand. Furthermore, the availability of new low-cost standardized production units for aluminum enameling should enable present porcelain enamel jobbers to get in on the ground floor of this booming industry.

Because of porcelain enamel's innately superior characteristics — durability, corrosion resistance, flexural strength, fire resistance, and appearance — it is natural that more and more architects are today specifying it as a finish on aluminum as well as other popular base materials. . . Yet, while the future is bright, it can easily be dimmed by careless or slipshod operations. Porcelain enameling is a skilled and exact art. Careful attention to quality must be given, otherwise the entire industry will receive a serious set-back.

I sincerely believe that adequate and intelligent promotion will bring to full bloom this product which offers so much promise.

William N. Noble, Vice President
Frit and Glaze Div.
Ferro Corp., Cleveland, Ohio

Interest in NST

Gentlemen: One of our divisions, the Day and Night Manufacturing Company, is a member of the National Safe Transit program.

I wonder if you could let me know whether or not this membership would apply to other operations of the corporation, the general requirements and the information pertaining to membership.

Ralph C. Wilgus
Director of Traffic
Carrier Corporation
Syracuse 1, N. Y.

Gentlemen: We are very interested in the pre-shipment testing program for packaged finished products, and the activities of the National Safe Transit Committee. May we have full details?

E. McHargue
Traffic Manager
Nutone, Inc.
Cincinnati 27, Ohio

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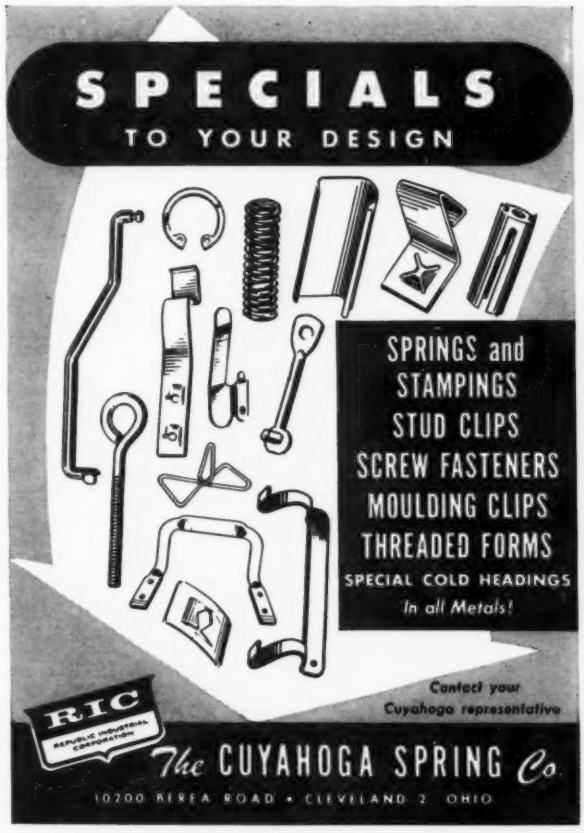


Versatile Pre-Plated CHROME-STEEL and NICKEL-STEEL Now Available in Three Grades

Even before you get them, these versatile design materials are more than half way through your production line! Already cleaned, plated, polished; you just fabricate and assemble. Save three out of five production steps — fabricate with standard methods. *Save even more now with C-Grade*, a new low-cost utility grade for applications that don't require the quality of our A and B grades. Sheets, coils, strips.

Write for samples and information.

NICKELOID METALS SINCE 1898 NM

AMERICAN NICKELOID COMPANY
PERU 11, ILLINOIS

A Superb Interchemical Achievement!

NEW VITRILAN LC*

Organic Baking Enamel

At last! An economy priced premium finish for appliances and metal products. VITRILAN LC is the result of an entirely new concept in coating resin technology, offering you a combination of beauty, durability, hardness, toughness, resistance to abrasion, corrosion, soaps, alkalies, and detergents, and excellent color and color retention *never before equalled except at premium prices.*

Compare the properties of VITRILAN LC with finishes costing as much as $1 per gallon more! Compare it with the high-priced acrylics for color and color retention, soap and detergent resistance. Compare it with the epoxies for hardness and toughness.

You'll be amazed at what your finishing dollar will buy!

Your production people will like VITRILAN LC too. It handles beautifully . . . can be sprayed, dipped or flow coated . . . bakes at conventional schedules.

Write for further details on VITRILAN LC today!

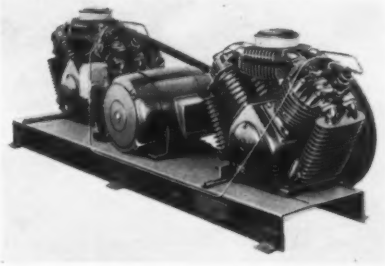
Interchemical
CORPORATION
Finishes Division

Headquarters Office: 224 McWhorter St., Newark 5, N.J. • Factories: Chicago, Ill. Cincinnati, Ohio. Elizabeth, N.J. Los Angeles, Cal. Newark, N.J. Mexico City, Mex. In Canada, this product is made by Aulcraft Paints Limited, Toronto, Ontario, and sold under its trademark. • *VITRILAN LC is a trademark of Interchemical Corporation.

NEW

SUPPLIES & EQUIPMENT

Larger Air Compressors

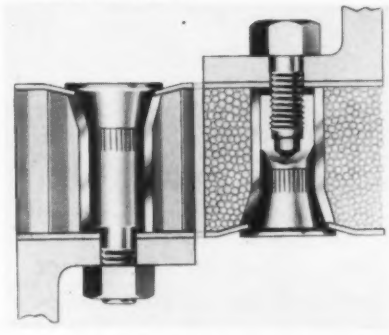


To meet the demand for more air pressure for spray painting, and for operation of air tools in shops, new 20 and 25 horsepower, 125 and 175 pound air compressors have been introduced.

Double compressor units are said to displace from 96.4 to 129 feet of air per minute. They are equipped with pressure switch and magnetically controlled unloaders. The vee-type multiple-cylinder compressors have a bore in the first stage of 4½ inches, and 2½ inches in the second stage, with a stroke of 4 inches.

For further information, contact Dept. MPM, The DeVilbiss Co., Toledo 1, O.

Structural-type Sandwich Panel Fastener

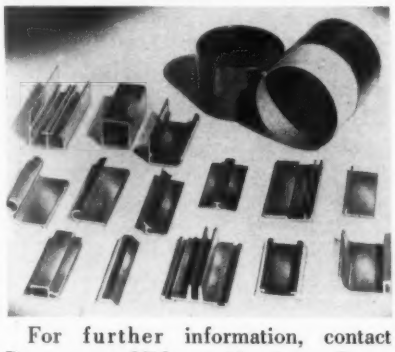


A structural-type fastener has been announced as the latest addition to a line of honeycomb and sandwich panel fasteners. The item is said to be designed to provide additional strength for a variety of sandwich-type panels now in use in electronics, missiles, and other industries.

For further information, contact Dept. MPM, The Delron Co., Inc., 5224 Southern Ave., South Gate, Calif.

Idea Kit of Extruded Aluminum

A kit, containing a sample handful of extruded shapes, and intended to suggest an idea or two to the product designer, is offered. The kit consists of assorted shapes, each about 3 inches long. Dimensions range to 3 inches on a side. Maximum dimensions are those that will fit inside a 3-inch circle, except for hollow shapes. Short cuts in production, attachment with a minimum of fastenings, product simplification, and decorative trim are some of the possibilities offered, it is claimed by the manufacturer.



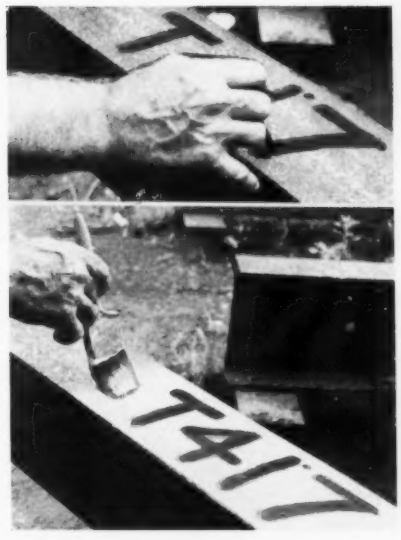
For further information, contact Dept. MPM, Midwest Aluminum Corp., 7696 W. Michigan Ave., Kalamazoo, Mich.

New Lead-Free Porcelain Enamel for Aluminum

A new lead-free enamel for aluminum has been introduced which is said to offer greater coverage, abrasion resistance, and resistance to chemical attack than earlier frits for this purpose. Thinner coatings are reported possible with this enamel, due to its greater opacity and markedly-lower tendency to dissolve pigments and opacifiers.

It is reported that weather resistance of the enamel has been demonstrated by test panels exposed to weathering conditions in Texas and Minnesota. Acid resistance to the PEI 10-per cent citric acid spot test is rated as Class B to Class AA.

Further information concerning the properties or the application of the enamel may be obtained by writing Dept. MPM, American Lava Corp., Chattanooga 5, Tenn.



Paint Puts Permanent Marking on Steel

A marking material, called Penapaint, that can be placed on bare metal to identify iron and steel sections, and which is said to instantly penetrate subsequent paint coatings, is now available. An identifying code is applied to the bare metal with a brush, spray, or stencil, either before or during fabrication. When a protective coating is applied, the marking material is said to instantly penetrate through the coating, allowing the original code number to continue to identify the section on through all subsequent fabricating and assembling operations.

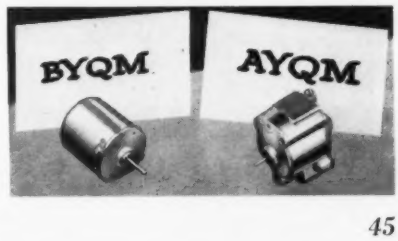
For further information, contact Dept. MPM, Phillips Products, Inc., 1435 E. 17th St., Cleveland 14, Ohio.

Economy DC Motor Line

The motors pictured are said to be typical of the new line of economy dc motors designed to meet consumer demand for dependability in low-cost, mass produced goods. Consistent high quality is claimed for these battery operated motors. A special, patented integral governor is said to offer exceptionally stable characteristics. Without slip rings or brushes, the governor functions effectively through a wide range of voltage and load variation.

For further information, contact Dept. MPM, Barber-Colman Co., Rockford, Ill.

More New Products on Page 50 →



THERE'S A BETTER WAY... to protect your products!

Glidden finishes provide *real umbrella protection*—against heat, cold, humidity, corrosion, abrasion, fading, staining, impact and all other enemies of product finishes.

Custom-formulated Glidden finishes furnish the special protection your particular products need. What's more, Glidden Technical Service is the most thorough in the industry. Experienced technicians analyze finishing problems *in your plant;* make practical, helpful recommendations.

Make sure you get both—Glidden Finishes plus complete Glidden Technical Service—for *real umbrella protection,* whatever your product, process or problem.

QUALITY Glidden PRODUCTS

FINISHES FOR EVERY PRODUCT

The Glidden Company
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900 Union Commerce Building • Cleveland 14, Ohio

"THE GLIDDEN UMBRELLA" of protection combines comprehensive technical service and custom-formulation of product finishes for all industry.

PAINT AND VARNISH PRODUCTION CLUBS ANNUAL MEETING

Breakthrough developments coming in organic coatings

AN MPM STAFF REPORT

EXCLUSIVE MPM PHOTOS

RAPID DEVELOPMENTS in the organic finishes field brought the attendance at the 36th Annual Meeting of the Federation of Paint and Varnish Production Clubs to an estimated total of 3,100 paint formulators and finishers. In conjunction with the meeting, the 23rd Paint Industries' Show was held under the same roof — the Cleveland Public Auditorium, October 6-8.

The show featured all the new organic finishes and solvents available to the metal products industry. New improved finishes were the centers of attraction in each of the paint manufacturers' booths. Among the new product developments were urethane film coatings, more different types of water base epoxy finishes intended for a wider range of uses, a more pale nondrying alkyd resin especially suitable for white, high-bake finishes and, in the equipment field, a new machine for applying finishes continuously by a new principle called pressure curtain application.

Urethane film coatings combine highly-elastic properties with high wear resistance, and may find a place in the appliance and metal products industries in the future.

Improved epoxy resin emulsion coatings that allow emulsification (thinning) by the paint user have been developed. This concentrated dispersion is said to be readily emulsified when mixed with water by hand and can be spray or dip applied.

The new machine employs a curtain-like flow of liquid onto a continuous sheet of metal which, in itself, is not a remarkable idea, but it is done with the aid of pressure in the paint feed chamber. The purpose of the pressurized feed is to control virtually all types of finishes from the standpoint of viscosity. Because of the pressure in the feed chamber, finishing materials are said to not require thinning in order to adjust for different viscosities and required production rates.

Though directed to the paint production people at the meeting, one of the panel discussions held on the subject of "New Developments in Epoxy and Urethane Coatings" proved to be of great interest to metal finishers. Use of epoxy-based primers for appliances is of course well established. In an interesting demonstration by H. W. Howard, Shell Chemical Corp., the audience was shown a method of applying epoxy coatings based on a German invention called the fluidized bed technique.

According to Howard in an interview by an MPM editor, this process could very well find great use in the appliance industry in the not too distant future.

This was the first known application of the technique to epoxy coatings. A miniature chamber was used for the demonstration which consists of heating the object to be coated to a temperature above the melting point of the plastic, immersing the object in a bed of air-agitated plastic epoxy powder and, after removing it, allowing the object to cure in an oven at 400°F. The thickness of the coating in the demonstration was 10 mils, well above that of conventional coating thicknesses, but it was brought out that thicknesses could be regulated in the near future.

The possibilities that could be opened up by this technique, according to Howard, are fluidized beds of 3-4 tons of plastic through which heated washing machine cabinets are passed, picking up a *one coat complete finish* — and then passing through a curing cycle. No primers will be required because the durability of such a coating will preclude a multi-coat finish. The improvements that are being made in the epoxy coatings segment of the industry indicate that a one-coat, easy-to-apply, dur-

Panel discussion — "Water Thinned Paints for Industrial Use." (Left to right) — F. J. Stickle, American Cyanamid Co.; H. C. Cheetham, Rohm and Haas Co.; C. R. Hendrickson, The Glidden Co.; R. L. Sears, Acme Quality Paints, Inc.; C. Thorstad, Jones-Dabney Co.; W. E. Mitchell, General Motors Corp.; R. Boller, Archer-Daniels-Midland Co.; and M. C. Carpenter, Dow Chemical Co. Not shown is the panel moderator, R. D. Hamilton, Ford Motor Co.

Panel discussion—"New Developments in Epoxy and Urethane Coatings." (Left to right)—Dr. M. E. Bailey, National Aniline Div.; R. G. Fortener, Jones-Dabney Co.; H. W. Howard, Shell Chemical Corp.; and Dr. W. J. Remington, du Pont Co., Inc.

able finish will come in the future. Such a finish will minimize fire hazards with the elimination of solvents. Much development work will have to be done to reach this goal, according to Howard. He feels confident, however, that the one-coat epoxy system will be feasible.

Actually, this process is available at the present time through an American firm (name supplied on request) that will license any firm.

Another member of the panel on epoxy and urethane coatings was Dr. W. J. Remington, duPont, who spoke on formulation of urethane materials. He pointed out several points to an MPM editor after the panel discussion that should interest appliance and metal products manufacturers. Urethane foams can be made flexible enough for cushioning sofas, or rigid enough to serve as a foamed-in-place shipping container for exporting appliances. With the advent of better gases for foaming, the high insulation value of urethane foam reduces in half the thickness of insulation normally required in refrigerators.

Utilization of urethane foams for insulating refrigerators has been feasible for at least a year, but the delay at the present time is in the development of production equipment for applying the foam.

Urethane coatings equal or surpass the gloss readings obtained in any other finish. Its flexibility is such that it can be applied to rubber molding without ever cracking or peeling. A sample was shown to the MPM editor who found its properties remarkable. Urethane coatings have not yet been developed for use on metal products, but present use could be for highly-durable, extremely-glossy top coatings — however, this is a small possibility at the present time. More development work is needed to formulate these coatings with pigments to make them usable for appliances.

Urethane coatings that are on the market now are being used in place of varnishes. Application to wood products is the present best market for this material.

There is a possibility of a marriage of epoxy and urethane coatings that could open new uses for this type finish. This is strictly in the development stage at the present time.

"Water Thinned Paints for Industrial Use" was the topic of discussion of a panel of supplier companies and user representatives. Each member of the panel reviewed the advantages and disadvantages of water-based paints that exist at the present time. The best known advantage, of course, is the elimination of fire hazards. The consensus of the panel on this point was unanimous in agreement. Savings in solvents was also brought up by each of the members as being a significant advantage.

Potential for the future in water-based paints will increase as specially formulated water-thinned paints are developed for specific uses. One of the problems that has had to be solved is foaming. Anti-foaming agents tended to reduce gloss and covering power until better agents were developed. All foaming problems have not been solved as yet, but the progress made to date indicates that foaming will not remain a problem. These finishes will be able to be spray-applied with little difficulty.

M. C. Carpenter, Dow Chemical, predicted that water-thinned paints will eventually be used in all industrial applications. He further stated that an educational campaign should be pushed by the paint manufacturers to instruct metal fabricators in the handling of latex of water-thinned paint systems.

Proof of the high corrosion resistance of this type finish is the use of the coating on the inside of tank cars used for carrying caustic solutions, stated Carpenter.

The prediction of wide industrial applications by Carpenter was agreed to by C. R. Hendrickson, The Glidden Co. He further pointed out that prices of water-thinned paints should become competitive with other finishes.

An important point brought out by Hendrickson was that water-thinned paints should be tailored to meet the requirements of a specific use. It is difficult to use one type of water-thinned paint for many applications.

Though not a solver of all problems, the properties of water-thinned paints should surpass those of solvent- thinned paints, Hendrickson asserted. The reason for this potential superiority is the high molecular weight materials that can be used with water-thinned paints.

Dr. H. C. Cheetham, Rohm and Haas Co., stated that the new acrylic copolymer materials that give high molecular dispersions from low viscosity media are looming as ideal finishes for top coats on appliances. These finishes are thermosettting (350°F. for 30 min.), and are said to possess exceptional properties, including high gloss, strength, and adherence. Dr. Cheetham stated that comparison of this finish with the best melamine solvent-thinned paint has given equal gloss with better other properties.

News

New Paint Firm Formed

R. Wain Bowman, former vice-president of Aluminum Industries, Inc., has announced the formation of a new company which has purchased the Permite Paint Division from Aluminum Industries, Inc., Cincinnati, and its subsidiary, Permite Prod. Co., Modesto, Calif.

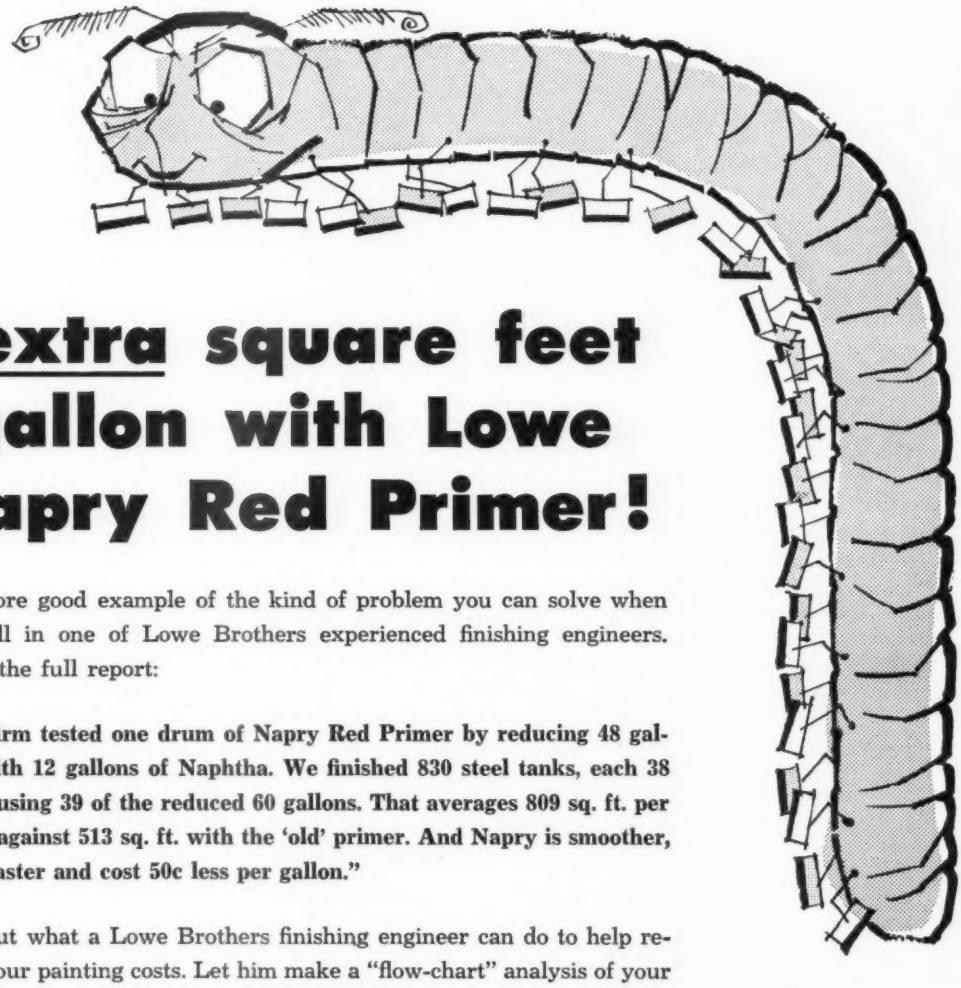
The new company will be known as Permiteco, Inc. It will manufacture and distribute aluminum paints, specification varnishes, and allied materials. Sales, product development, and manufacturing offices are located at 1100 E. Monument Ave., Dayton 2, Ohio, and 7th and Pecos Sts., Modesto, Calif.

Officials of Permiteco, Inc., are R. Wain Bowman, president; L. S. King, vice-president; and J. C. Eismann, secretary-treasurer.

Dow Announces Price Reduction of Latex for Metal Finishes

A reduction of two cents a pound in the price of Dow Latex 566 has been announced recently by The Dow Chemical Co. New bulk price of the product is 36½ cents a pound solids contained.

Latex 566 is a vehicle manufactured especially for metal finishing.



296 extra square feet per gallon with Lowe Napry Red Primer!

One more good example of the kind of problem you can solve when you call in one of Lowe Brothers experienced finishing engineers. Here's the full report:

"This firm tested one drum of Napry Red Primer by reducing 48 gallons with 12 gallons of Naphtha. We finished 830 steel tanks, each 38 sq. ft., using 39 of the reduced 60 gallons. That averages 809 sq. ft. per gallon against 513 sq. ft. with the 'old' primer. And Napry is smoother, dried faster and cost 50c less per gallon."

Find out what a Lowe Brothers finishing engineer can do to help reduce your painting costs. Let him make a "flow-chart" analysis of your finishing system *without* obligation. Send the coupon right now.

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MPM-11

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A new SPARK for gas clothes dryers

A NEW, AUTOMATIC DIRECT SPARK ignition system for gas clothes dryers is currently being announced and was shown for the first time at the AGA convention in Atlantic City.

At a pre-view showing for MPM editors at Controls Company of America (Milwaukee plant), the unit was demonstrated and described by Reno L. Vicenzi, senior project engineer (gas), and Paul F. Neess, manager of market research.

As is common knowledge among appliance engineers, conventional automatic ignition systems for clothes dryers depend upon a pilot flame for the ignition of the main burner gas, and provide an electric "hot wire' or glow coil as the ignition means for the pilot flame.

The new system provides an intense electric spark instead of a glow coil as an ignition means, and utilizes this spark to directly ignite the main burner gas, thereby eliminating the pilot burner. It is designed to incorporate all necessary safeguards against ignition failure of the main burner gas. The complete system includes the following components: (1) combination main burner control valve and regulator, (2) flame detector, (3) safety lock-out switch, (4) spark ignition transformer, and (5) spark electrode.

The *combination main burner control valve and regulator* provides the dual function of a pressure regulator and gas flow control valve. The control valve is an electro-magnetic type (not a solenoid) with soft seat, and spring loaded to assure tight shut-off.

The *flame detector* is a thermally-actuated electric switch responsive to the presence of the main burner flame. It acts to shut off the main burner gas in the event of ignition failure, and also controls the spark and terminates it after proving the presence of main burner flame.

The thermal element is a low mass stainless steel rod which reacts to the heat radiated from the main burner flame (it need not be in contact with the flame). The expansion and contraction of the rod is utilized to operate a ceramic-encased switch. This switch has a single pole double throw action, making one contact in the "cold" position and another contact in the "hot" position.

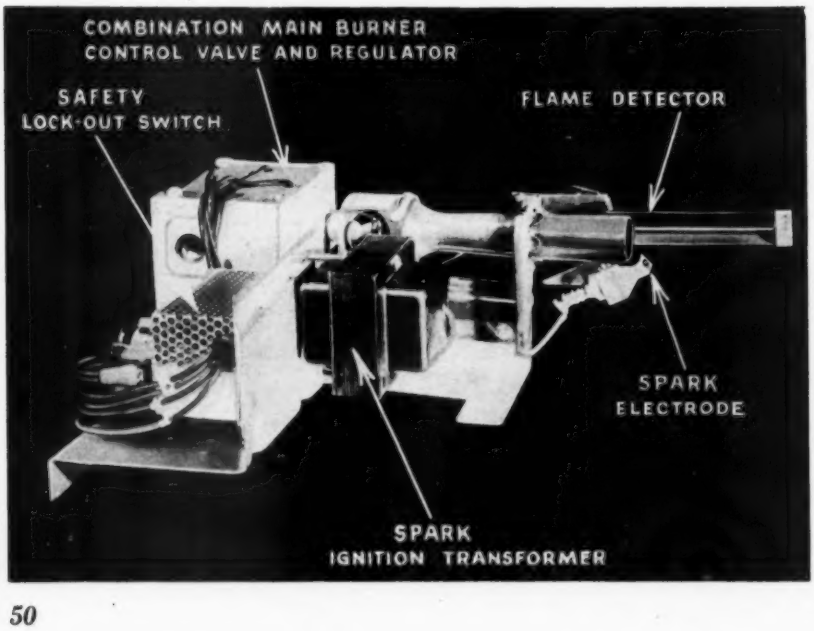
The *spark ignition transformer* provides the necessary high voltage for the spark.

The *spark electrode* is a combination of single electrode and mounting bracket so shaped that a small portion of the main burner gas is directed through the spark gap to assure prompt ignition.

How the direct spark ignition system operates

The system is energized in the conventional manner through operations of the timer and thermostat.

When the circuit is completed by the timer, and the thermostat calls for heat, the ignition transformer and main burner control valve are immediately and simultaneously energized through the "cold" contact of the flame detector. This same circuit energizes the safety lock-out switch heater. *to Page 60* →



An Electrostatic Paint Spray Hand Gun

Ransburg's new electrostatic hand gun.

An electrostatic paint spray gun that can be directed by hand is now available. It is said to make paint behave with essentially no overspray loss. The new gun was demonstrated at the Metal Show in Cleveland October 27-31 to climax a field testing program that reportedly produced interesting factual data.

The gun is adapted from the Ransburg No. 2 Electro-Spray Process and consists of a No. 2 Process atomizing bell incorporated into a lightweight unit designed for manual operation. A special voltage pack is connected with a flexible cable to the gun, creating an electrostatic field between the atomizing bell and the article to be coated. The article must be electrically grounded. Coating material is supplied to the atomizer by either pump unit or pressure tank. Rotation of the atomizing bell feeds the liquid to its outer edge. Atomization occurs under the influence of the electrostatic field, producing a spray of electrically charged particles. Electrostatic forces attract the spray to the article, and essentially all of the spray is said to be deposited on the article. No compressed air is used for atomization.

By completely replacing their air guns with electrostatic hand spray guns, Sands Mfg. Co., Cleveland, are said to have cut their paint bill to 1/3, reduced rejects, and reduced booth maintenance while getting a better finish on their water heaters.

Advantages claimed by Ransburg Electro-Coating Corp. from user's reports are production increases up to 200 per cent with no additional labor; up to 75 per cent reduction in spray booth maintenance cost; less air make-up for the finishing department; and higher quality of finish.

More New Products on Page 69 →

Presstime News

Petersen Oven and Baker Perkins Merger

The Petersen Oven Co., Franklin Park, Ill., has merged with the Baker Perkins Co., Saginaw, Mich. The new corporation is known as Baker Perkins, and all operations are scheduled to be carried on at the Saginaw address. The Petersen firm was well known as a leading producer of bakery equipment.

Appointments Announced

The appointment of a production manager and sales managers for its two major product lines was announced recently by Arthur E. Uhleen, executive vice president and general manager of Enamelstrip Corp., Allentown, Pa., division of National Steel Corp.

William M. O'Hara, Jr., has been named production manager, **Joseph L. Cobane** has been appointed sales manager of Vinyl-Metal Laminate Products, and **Glenn H. Fitch** has been named sales manager of Organic Coated Products.

Nu-Matic Grinders, Inc., Cleveland 3, Ohio, recently announced the appointment of **Arthur Raske, Jr.** to the position of the president. He has served in the capacity of executive vice president for the past six years. Nu-Matic was formed ten years ago, and started in business with a single inflatable finishing wheel. Their present line includes 48 types and models.

Ironrite to Produce Ironers for Maytag

Ironrite, Inc., and the Maytag company jointly announced an agreement whereby Ironrite will produce ironers for Maytag.

In explaining the move, Claire G. Ely, marketing vice president for Maytag said, "We feel it is important that Maytag should provide its dealers with ironers to complete their home laundry product line."

Cabinet Manufacturers Form Better Kitchens Institute

Formation of Better Kitchens Institute, designed to provide the homemaker with basic information on good workable kitchen planning and newest kitchen products as a public service, is announced by seven leading manufacturers of steel kitchen cabinets.

Better Kitchens Institute members include General Electric Co., Geneva

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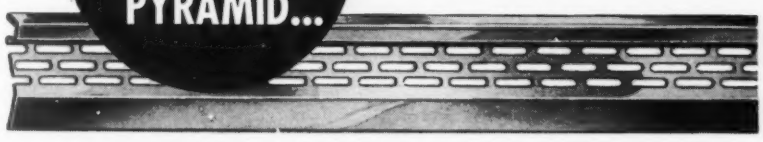
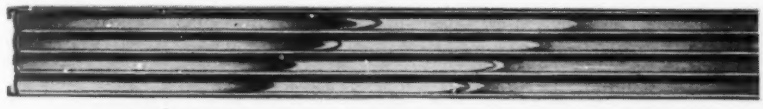
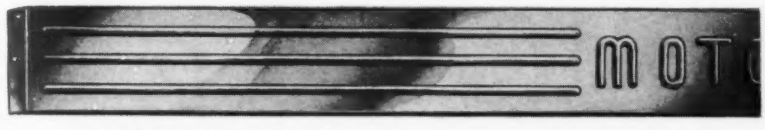
MOULDINGS by PYRAMID... offer widest variation for new design creation



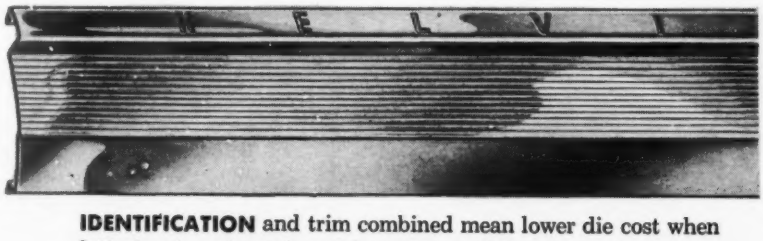
PERFORATION or piercing in roll formed mouldings meets a new trend in lamp shade trim for unusual lighting effect.



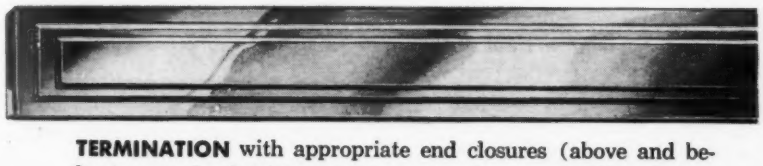
CORRUGATION, fluting, beading or reeding—yours in endless variety through Pyramid's low-cost precision roll-forming.



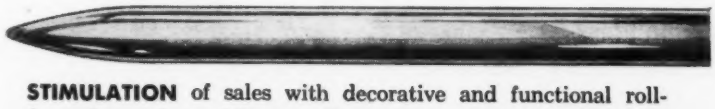
DECORATION with baked enamel striping as shown, or entirely pre-enameled, adds the magic of color to functional trim.



IDENTIFICATION and trim combined mean lower die cost when lettering is embossed or debossed on roll-formed sections.



TERMINATION with appropriate end closures (above and below) puts the finishing touch on almost any moulding design.



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CG Electronics Names Plant Manager

Appointment of John E. Tillman as plant manager of CG Electronics Corp., a division of Gulton Industries, Inc., was announced by Harold Poulsen, general manager. The company is a producer of radio control equipment.

Prior to joining Gulton Industries, Tillman performed production and engineering assignments in radio communications for the General Electric Co. for more than 10 years. He was a project engineer for Dalmo-Victor Co., San Carlos, Calif., and chief engineer for Aviola Radio Corp., Phoenix, Ariz.

Toledo Desk & Fixture to Add Plant Facility

At a sales meeting held recently, Harold C. Schott, president of Toledo Desk & Fixture Co., Maumee, Ohio, announced that a contract had been let for the construction of an addition to the present factory in Maumee. The contract is in excess of $150,000, and will provide an additional 35,000 square feet of manufacture and warehouse space. Schott also stated that negotiations had been completed for securing a contract for the firm to manufacture a large quantity of commercial air conditioning equipment. With negotiations in process for additional large government contracts, a gradual increase in present employment is expected to result.

Tenth Plant Maintenance, Engineering Show Set

The next Plant Maintenance & Engineering Show is scheduled to be held at the Public Auditorium, Cleveland, Ohio, January 26-29, 1959, it has been announced by Clapp & Poliak, Inc., New York.

Exhibits are devoted to the demonstration of equipment and products designed to keep plants and machinery in operation.

Hamilton Mfg. Corp. 1958 Sales Higher Than Same '57 Period

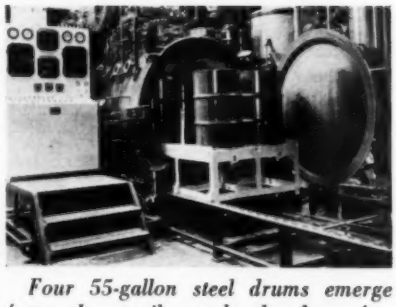
Hamilton Mfg. Corp., Columbus, Ind., large maker of metal household furniture and juvenile seating, announced recently that sales in the company's Household division for the first eight months of 1958 were 10 per cent higher than for the same period last year, when the division had its second best sales year. The increase was announced by Thomas R. Henderson, vice president of sales, who said: "Applying this rate of operation for the rest of 1958 will give us a record-breaking year, and we expect the rate to continue."

Employment Up at Maytag

The Maytag Co., Newton, Iowa, has hired approximately 300 new employees for its Newton plants since recently recalling the remainder of the workers furloughed earlier this year, according to E. F. Scoutten, vice president, personnel.

In addition, production departments at both plants have been working a 53-hour week in an effort to catch up on demand. Current production levels are somewhat higher than they were at the same time a year ago.

New Food Concentrate Packaging Method Utilizes Steel Drum



Four 55-gallon steel drums emerge from the sterile pack chamber after having been sterilized, cooled, placed under vacuum, and filled and sealed with food concentrate. The sterile pack method, announced August 28 by Rheem Mfg. Co., makes use of a special Rheem drum with lining of electrolytic tin plating after partial fabrication. The sterile pack chamber, developed and manufactured by Thermovac, Inc., Stockton, Calif., is actuated and controlled by an electronic panel, in an interlocking system where each phase of the operation must take place before the subsequent one is allowed to start. Installation shown here is at Thornton Canning Co., Thornton, Calif., a packer of food concentrates for canners and re-manufacturers throughout the United States.

PEI Shop Practice Forum Scheduled for Urbana, Ill.

"Modern Practices in Porcelain Enameling" will be the theme of the Porcelain Enamel Institute's 20th Annual Shop Practice Forum, scheduled to be held at the University of Illinois, Urbana, November 5-7, 1958. The preliminary program prepared by the Forum committee, under the chairmanship of L. C. Farrow, Whirlpool Corp., will be based on six major sessions dealing with the following subjects: 1. Base Metals; 2. Metal Preparation; 3. Tests and Specifications; 4. Cost Symposium; 5. Architectural Porcelain Enamel; 6. General Interest Symposium.

NEMA Section Gives IRS Position on Proposed Rule Changes

The Internal Revenue Service has been asked by the Room Air-Conditioner Section, National Electrical Manufacturers Association, to adopt a newly-developed industry definition for self-contained air conditioning units, as well as to consider three key requests in connection with proposed IRS revisions of Internal Revenue Ruling 54-462. Under the proposed ruling, IRS would make all "self-contained air-conditioning units" subject to the 10 per cent manufacturers excise tax, instead of only those under one horsepower as presently taxed.

Roper Announces New "Value-High" Gas Ranges

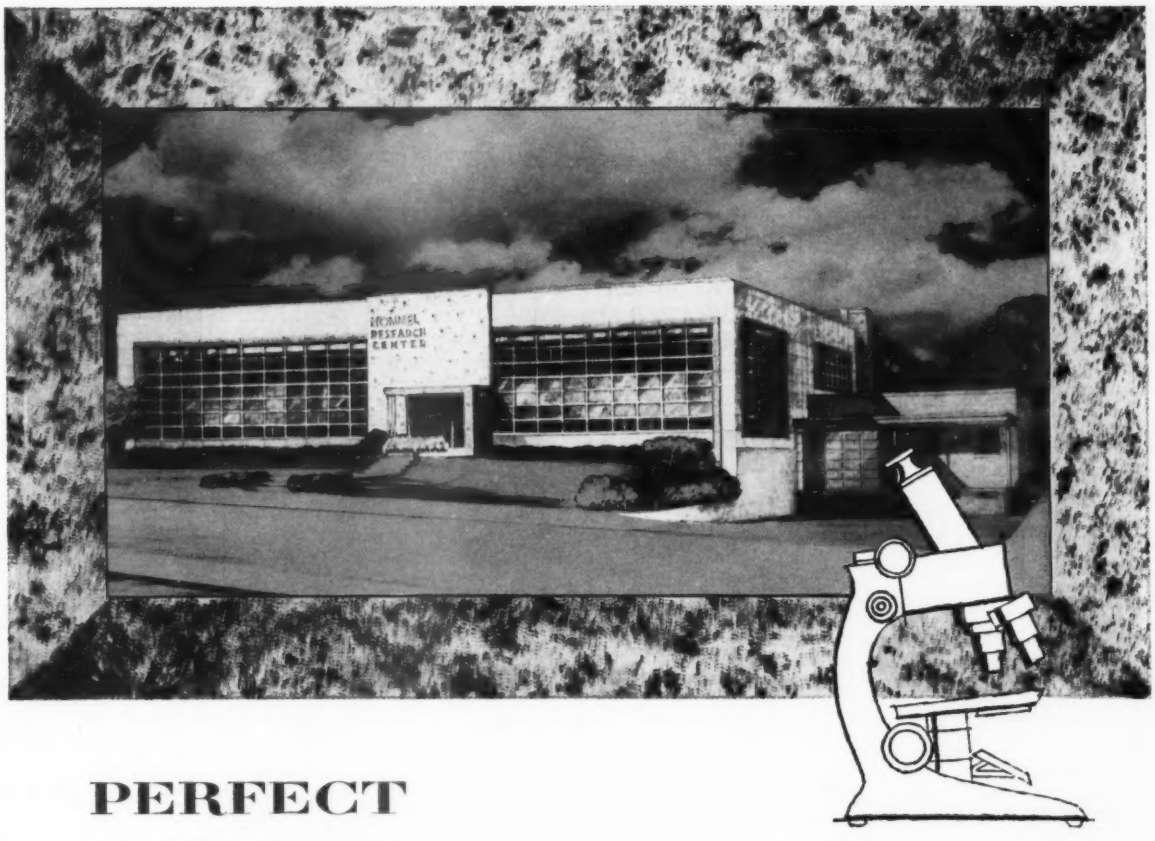
A newly-designed line of Roper gas ranges is now being shown by dealers across the country, according to the manufacturer, Geo. D. Roper Sales Corp., Kankakee, Ill. Termed "Value-High" models, the new offerings are said to incorporate a wide selection of convenience features, and completely restyled back panels. All the new models are in the 36 inch size.

One of the models features the "Rotis-O-Grill" range-top cooking center, which combines a vertical broiler, rotisserie, built-in griddle, and extra work space.

In charcoal and white porcelain enamel with chrome trim, the new back panel incorporates an electric timer alarm-time clock, incandescent lamp, appliance outlet, and control switches.

NAMA 12th Annual Convention Scheduled for St. Louis

A complete program of speeches and panel discussions on every phase of the automatic merchandising field has been



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planned for the 12th annual convention and exhibit of the National Automatic Merchandising Association, scheduled to be held at Kiel Auditorium, St. Louis, Mo., November 2-5, 1958.

Keynote speaker of the convention will be William A. McDonnell, president of the Chamber of Commerce of the United States, and board chairman and chief executive officer of the First National Bank, St. Louis. A number of workshops are planned, as well as clinics and panels. A program for the wives of NAMA members has also been planned. About 140 suppliers and machine manufacturers are expected to have exhibits at the show.

Design Firm Opens New York Office

Smith, Scherr & McDermott, Akron, Ohio, industrial designers, announced the opening of a New York office at 10 West 56th St., New York.

Smith, Scherr & McDermott, all members of the American Society of Industrial Designers, specialize in product design and styling, package design, including both construction and graphics, and interior and architectural design. Two of their appliance designs were shown as outstanding examples of United States industrial design at the Brussels World's Fair: a gas heater for Perfection Industries and a wall-hung range for The Tappan Company.

New Refrigerator Insulation

Frigi-Foam has been selected as the name to identify the new rigid foam insulating material developed recently by Frigidaire division of General Motors.

Herman F. Lehman, GM vice president and head of Frigidaire, revealed the new name in a talk at a preview of the division's 1959 appliances at Tarrytown, N.Y.

The new insulation is a combination of urethane and freon. Lehman said it is much more efficient than conventional insulation and ultimately will make it possible to increase the interior capacity of refrigerators considerably without changing exterior dimensions.

PMI Elects Officers

At the annual meeting of the Pressed Metal Institute, held at The Cloister, Sea Island, Georgia, September 28th — October 2nd, 1958, the following officers were elected for the coming year:

President: Carter C. Higgins, Worcester Pressed Steel Co., Worcester, Mass.

Vice Presidents: F. F. Rimmler, Volkert Stampings, Inc., Queens Village, N. Y.; M. A. Sherwood, Grand Haven Stamped Products, Grand Haven, Mich.

Secretary-Treasurer: Melvin Lorentz, HLP Mfg. Co., Cleveland, Ohio.

Honorary Secretary-Treasurer: W. Bryant Gemmill, American Stamping Co., Cleveland, Ohio.

At this same meeting, there was an election for the board of directors, and they are:

Johan M. Andersen, Duplicon Co., Inc., Westboro, Mass.
Seth G. Atwood, Atwood Vacuum Machine Co., Rockford, Ill.
Glenn F. Ball, The Deerfield Mfg. Co., Mason, Ohio.
Melvin R. Blume, Wisconsin Tool & Stamping Co., Schiller Park, Ill.
C. R. Boeckler, Niagara Machine & Tool Works, Buffalo, N. Y.
Bernard L. Brierton, The Bostrom Mfg. Co., Cudahy, Wis.
F. W. Custer, The American Stamping Co., Cleveland, Ohio.
Norman D. Dunlap, The Minster Machine Co., Minster, Ohio.
Bruce Krasberg, R. Krasberg & Sons Mfg. Co., Chicago, Ill.
L. L. Lockshin, Century Engineering Co., Ltd., Toronto, Ontario, Canada.
E. T. Nolan, Advance Stamping Co., Detroit, Mich.

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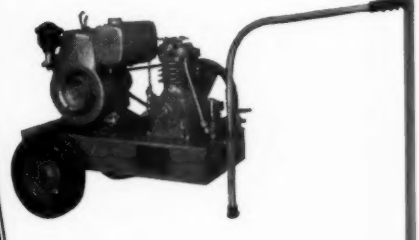
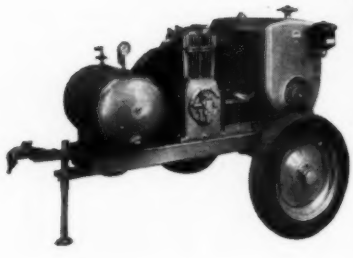
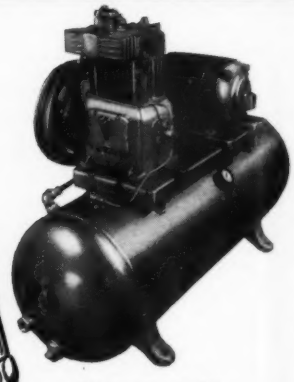

For small one-man contractor use


Heavy duty air compressors for use by general painting contractors


Stationary units for small plants and garages

Stanley F. Paulin, Capital Metal Industries, Ltd., Toronto, Ontario, Canada.
Robert H. Serrick, Defiance Stamping Co., Defiance, Ohio.
James McC. Sessions, J. H. Sessions & Son, Bristol, Conn.
C. E. Stryker, Maysteel Products, Inc., Milwaukee, Wis.
Walter S. Sutowski, Freeway Washer & Stamping Co., Cleveland, Ohio.
Paul Vollmar, Vanco Tool & Machine Co., East Riverton, N. J.
Philip C. Wood, Acklin Stamping Div., Tecumseh Products Co., Toledo, Ohio.
Wilson A. Wright, Republic Steel Corp., Cleveland, Ohio.

BRI Noise Control Conference

Lighter weight construction, new types of interior partitions, increased use of mechanical equipment in buildings all have given rise to a widespread call by builders and architects for more information about noise control in terms they can understand, according to Charles H. Topping, president of the Building Research Institute, National Academy of Sciences. BRI has, therefore, scheduled for January 14-15 at the New Yorker Hotel, New York City, a research correlation conference on "Noise Control in Buildings" which will examine the various facets of the subject in language keyed to the needs of architects, builders, engineers, and contractors.

Prominent in the group of nationally known experts who will tackle the problem will be Robert B. Newman of Bolt, Beranek and Newman, Inc., one of the country's acoustical consulting firms, who will give a physical demonstration of noise control fundamentals to open the two-day meeting.

GM's Lehman Predicts Increase in Appliance Sales

Herman F. Lehman, General Motors vice president and head of Frigidaire division, recently predicted that appliance industry sales in 1959 would be up about seven per cent over 1958. Speaking at a preview of Frigidaire's 1959 appliances, he said that the industry's 1958 sales would be about 10 per cent below 1957.

Lehman pointed to the following current "buying trends:" This year, for the first time, industry sales of automatic washers and washer-dryer combinations will exceed sales of refrigerators. Despite increasing sales, only 15 per cent of American homes have a clothes dryer and only one in 20 has a dishwasher. Refrigerators with exterior color accounted for just over eight per cent of total sales last year, 11 per cent this year. One built-in range is sold for every two free-standing ranges.

Sylvania Head to Address NEMA 32nd Annual Meeting

Don G. Mitchell, chairman of the board and president of Sylvania Electric Products, Inc., is scheduled to address members of the National Electrical Manufacturers Association attending the Wednesday, November 12 luncheon at the 32nd annual meeting at the Traymore Hotel, Atlantic City, N. J. The meeting is scheduled for Nov. 10-14.

Engineer-Authors Win ASME Medals

National medals for outstanding engineering literature have been won by Harold J. Rose, vice president and consultant to Bituminous Coal Research, Inc., Pittsburgh, and Thomas P. Goodman, kinematics engineer for the General Electric Co., Schenectady, N. Y. The medals won are, respectively, the Worcester Reed Warner Medal and the Melville Medal.

They will receive their awards at the American Society of Mechanical Engineer's annual meeting in New York December 1-5.

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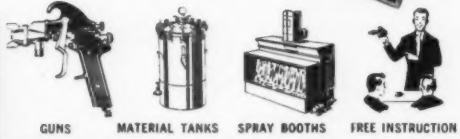
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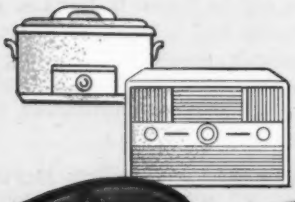

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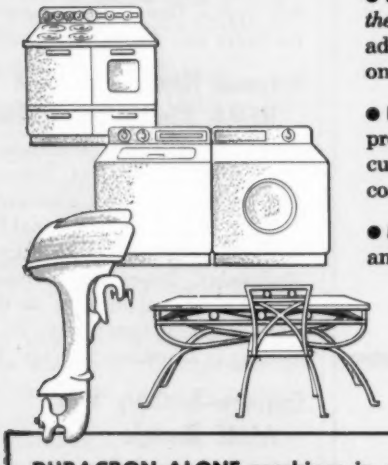

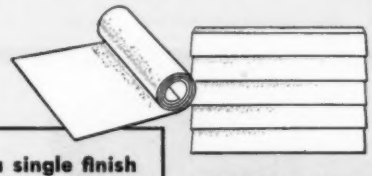

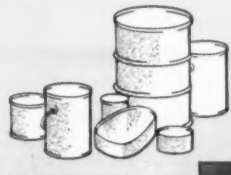

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Painting thirty thousand aluminum and magnesium parts per day

new South Carolina plant incorporates latest equipment design features for finishing die castings and other chain saw components

Closeup of one of the electrostatic booths in which parts are painted by disk method. "Spinner-wheel" workhooks rotate against friction bar within booth, turning part each two feet of travel.

by Allen S. Dawe • J. O. ROSS ENGINEERING DIV. OF MIDLAND-ROSS CORP.

THE HOMELITE DIVISION of Textron, Inc. recently dedicated a new 145,000 sq ft plant in Gastonia, S.C. This plant, on a 65 acre site, was designed and built expressly for the production of chain saws, these items formerly being produced along with a number of other products at the Company's Port Chester, N.Y. plant. Increased demand for this tool made it impossible to produce it in the volume required at the Port Chester facilities, and therefore the Gastonia plant was built.

One of the more interesting phases of chain saw production is the paint finishing of aluminum and magnesium parts for as many as 500 saws per day. Some 60 different parts are painted with vermillion, opalescent green, black, and silver enamel. Parts include such items as crank cases, fuel containers, drive cases, throttle handles, filler caps, cylinder shields, fan housings, starter pulley covers, etc.

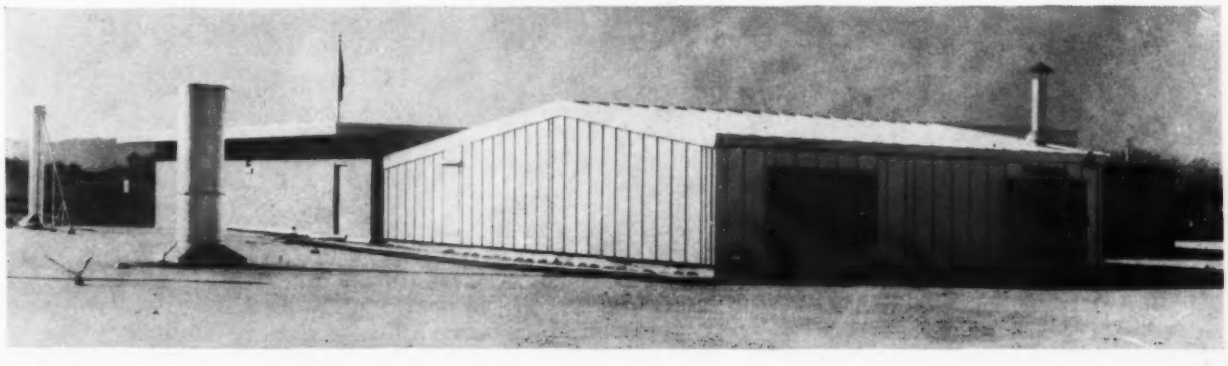
The finishing system employs two electrostatic spray booths and one hand spray booth. Previously, at Port Chester, a hand spray system was used for both saw and other parts. The new electrostatic line, for chain saw parts exclusively, has decreased paint consumption, reduced man-power requirements and increased production rates.

Degreasing forty baskets of die castings per hour

Parts (mostly die castings) come to the paint finishing room from the machine shop in carboard boxes, and each component is blown clean of loose foreign particles and turnings are picked from machined holes. Next, the parts are placed in wire baskets and travel by conveyor to the degreasing and dichromate area, where they travel through the degreaser at the rate of 40 baskets per hour, and upon removal are generally dipped successively in seven tanks. These include hot alkali, cold water rinse, hydrofluoric acid, cold water rinse, sodium dichromate, cold water rinse and hot water rinse. An electrically operated monorail hoist serves this seven tank installation. Fumes from the tanks are drawn off through hoods at the rear and are exhausted to the atmosphere. Tank solutions are purefied before being discharged into waste outlets.

Following metal cleaning and prep-

Rooftop bake oven in which the parts travel for 23 minutes at 300° F. Louvres admit make-up air. Doorway leads to oven heater box, control panel, and make-up air equipment.



(Left) — Surfaces which are not to be painted are masked, holes plugged, and parts racked for painting in this area. (Right) — Area in which parts are cleaned and chemically treated prior to painting. Cleaned parts receive a dichromate treatment for improved paint adhesion and protection against oxidation. Degreaser is in background. (Lower left) — Hand spray booth enables touchup of some parts not completely coated by electrostatic method. At left is entrance to flash-off tunnel where solvents are evaporated prior to baking. (Lower right) — Fuel and air supply and control equipment servicing bank of three line burners which heat make-up air. Depending on outdoor temperatures, one, two, or three burners may operate at a given time. They are automatically regulated to cut in and out as required to maintain pre-set air temperatures.

aration, the baskets are placed on a roller conveyor which carries them to the masking and racking tables where girls mask those areas not to be painted, plug holes which should not be coated, and hang the respective parts on their proper rack. Rack-loads of similar parts are accumulated on overhead trolley-mounted hangers and when a lot has been accumulated, the racks are transferred to the live monorail conveyor which carries them through the electrostatic and hand spray booths, flash-off tunnel, bake oven, and to the de-racking area. The conveyor travels at 15′/min (variable from 6 to 18′/min) and hooks are on 18″ centers.

Tooling designed for electrostatic spraying

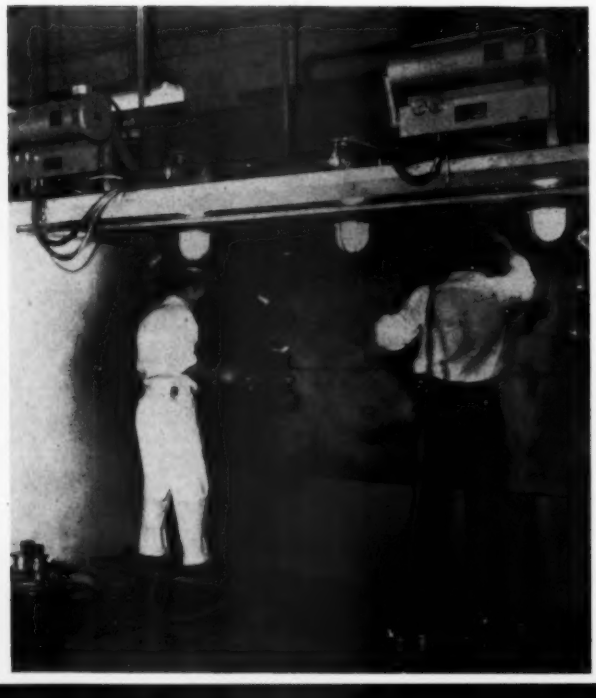
Racks are designed so that parts will fit into an imaginary cylinder 14″ in diameter by 36″ long. This will assure maximum coverage within the electrostatic spray booths. Paint is applied by the disk method, the electrically charged particles being spun from the 15″ disks and collected by the grounded parts. The hooks upon which the parts hang are of the "spinner-wheel" type and rotate as they make contact with a friction bar within the booth, making two revolutions per foot of travel so that all surfaces are covered.

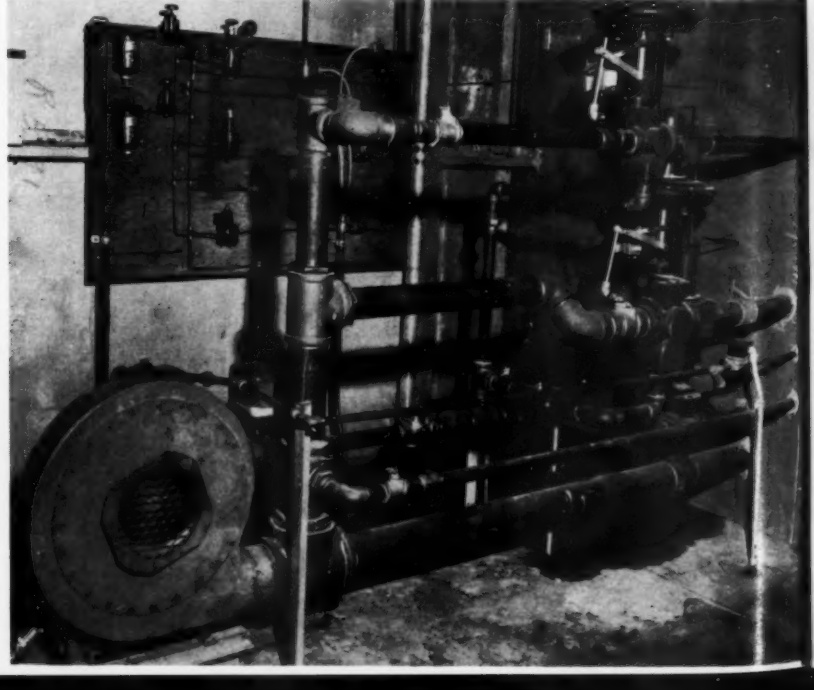
After leaving the electrostatic booths, parts travel through a hand spray booth where those parts which require it are touched up. In this connection, most parts require little or no hand attention, although certain shapes do require this final step. Upon leaving the hand spray booth, the parts travel for about three minutes within a flash-off tunnel which leads to the roof-mounted bake oven. They make several passes within the direct fired oven and are baked for 23 min at 300F.

As parts descend from the oven they enter a de-racking area where racks are transferred to a monorail conveyor on which they travel until attendants remove and hang them on stands at the packing tables. Here parts are de-racked and again placed in cardboard containers which go to assembly areas. A limit switch stops the conveyor should a rack not be removed from the conveyor as it leaves the de-racking area.

Air make up units employ continuously moving air filters

In addition to the oven and related heating equipment, air make-up units





are also located on the roof, thus further conserving in-plant floor space. Air make-up equipment includes a three-stage gas heating system having continuously moving air filters and a 55,000 cfm fan ducting to the finishing room. The line burners warm the incoming air in the winter to bring it up to room temperature and are designed to bring outdoor air from 20 to 80F. Burners operate in stages, depending upon heating requirements. The filter medium continuously unwinds from one pair of spools onto another, thus providing effective dust separation at all times.

The fan, located downstream of the burners and filter, discharges heated, filtered air into a duct for delivery to the paint finishing room. This room is walled off from the rest of the plant to prevent plant dusts from depositing on the finished parts. The air from the make-up system maintains the room under slight positive pressure as a further precaution against infiltration of dust.

A gas-filled temperature sensing bulb is located at the entrance of the air make-up duct, and connects (via tubing) with a controller instrument which regulates the three stage burners. As gas in the bulb expands or contracts, it regulates a valve at the controller. This valve varies the pressure of instrument supply air, activating various control units to regulate the line burners as air temperatures vary. Controls for the air make-up supply fan and air make-up combustion blower are located within the roof enclosure. The temperature controller is located in the paint finishing room.

Oven temperature control

A gas filled temperature-sensing bulb is located within the oven near the discharge duct and connects to a recorder-controller in the paint finishing room. As oven temperatures deviate from the set valve the controller is activated to regulate a valve in the fuel supply line. This in turn increases or decreases the 3,000,000 Btu/hr burner output. Controls for the oven exhaust fan, oven supply fan, and oven combustion blower are in the roof enclosure.

Oven and make-up air heating systems are equipped with customary safety devices and the overall system includes numerous interlocks to assure that one piece of equipment will not operate until related units are in operation.

Space is provided between the electrostatic and hand spray booths for paint preparation. Within this area paint and solvent are mixed, and when of the proper viscosity, carried to the electrostatic and hand spray booths. In changing from one color to another, solvent is first pumped through the lines before connecting them with the containers of new color.

Danielson Firm Relocates, Adds Facilities

In a move to expand their facilities, the V. W. Danielson Mfg. Co., Milwaukee, Wis., has moved to a new 23,000-square foot plant at 7026 N. Teutonia Ave. The step will provide an additional 10,000 square feet of production area, improved truck loading and materials handling facilities, outside storage, and off-street parking.

The company presently has a wide range of production equipment, including five hydraulic draw presses, 30 mechanical presses, painting facilities, and a complete tool room. A recent addition to the firm's equipment is a new deep-draw press which, it is reported, will draw to a depth of 18 inches. With the acquisition of this new press, the company's specialized deep-drawing services are greatly increased, according to Bernard Danielson, secretary of the firm.

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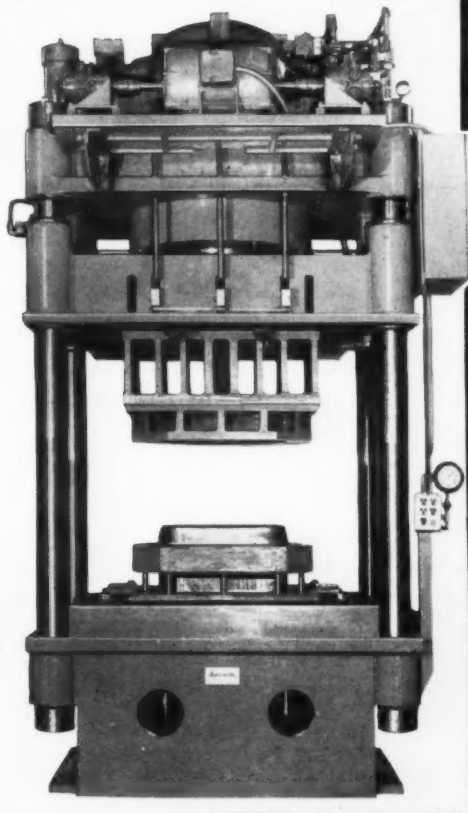

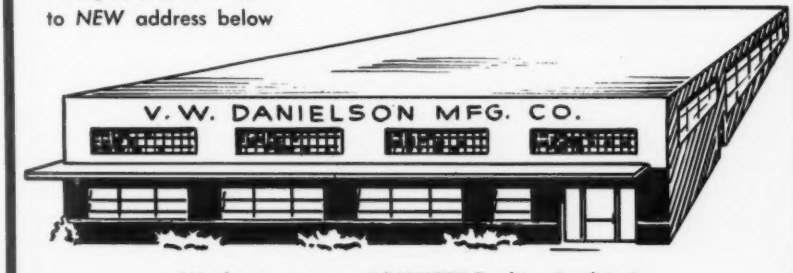

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INDUSTRY PERSONALS

Richard E. Stillwell has joined The Maytag Co., Newton, Iowa, as a research chemist in the research and development division. He is a graduate of Drake University.

Admiral Corp. recently announced the appointment of **Willis L. Wood** as national service manager. In his new post, he will direct the overall activities of the company's accessories and national service and parts divisions, which have been combined.

Alexander Black has joined Rheem Mfg. Company's Defense and Technical Products division as vice president for sales, L. M. Limbach, vice president and general manager of the division, announced recently at division headquarters at Downey, Calif.

The appointment of **David L. Wilcox** as half-time research assistant in ceramic engineering at the University of Illinois was announced recently. He is associated with the Wright Air Development project on the coating of wire, under the supervision of Professor A. L. Friedberg. **Doris M. Maroney** has also been appointed a research assistant in ceramic engineering at the university. She is working on a National Science Foundation Project on titania opacifiers for porcelain enamels, also under the direction of Professor Friedberg.

The appointment of **Herbert M. Reeves, Jr.,** as manager of mobile home appliance sales was announced recently by the Norge home appliance division of Borg-Warner Corp., Chicago. He will be responsible for sales to mobile home manufacturers nationally, according to Frank Coyle, Norge sales manager of the refrigerator division and contract sales.

Lyon Metal Products, Inc., Aurora, Ill., has announced the promotions of **Donald Soule** to the position of traffic manager, and **Charles Miller** to assistant traffic manager at the Aurora factory. Soule replaces H. H. McManus, deceased, who had served as traffic manager for more than 30 years.

Previous to two years with the U. S. Army Corps of Engineers, Mr. Soule had worked in the Lyon shipping department.

Miller is a graduate of the College of Advanced Traffic in Chicago.

The promotion of **Lincoln M. Larkin** to the position of general manager of the air conditioning division of the Whirlpool Corp. has been announced by Jack Sparks, director of marketing.

Larkin has been product manager for air conditioning since joining Whirlpool in 1955, when the Seeger Mfg. Co. was merged with Whirlpool. Before that, he was a regional sales manager for air conditioning with the General Electric Co.

W. J. Bailey, president of The Payne Co., La Puente, Calif., has named **William F. Steiner** as sales manager of this West Coast manufacturer of heating and air conditioning equipment. Steiner has been associated with gas appliance manufacturers for a period of 15 years.

The appointment of **Robert H. Quayle, Jr.** as executive vice president of the Norge home appliance division of Borg-Warner Corp., Chicago, was announced by Judson S. Sayre, president.

Quayle resigned as division merchandise manager of Montgomery Ward & Co., in charge of merchandising of all heavy goods. Before joining Montgomery Ward in July 1956, he was associated with Sears, Roebuck & Co. for 18 years.

Robert C. Strassman, secretary and treasurer of Badger Die Casting Corp., Milwaukee, Wis., has been elected president of the American Die Casting Institute. He has also been elected a director-at-large, having served on the Institute board since 1957.

QUAYLE

STRASSMAN

John R. Caulk, Jr., executive vice president of Hussmann Refrigerator Co., has announced the appointment of **Richard A. Line** to the newly-created position of marketing service manager, and **Donald E. Friedman** to fill the position of chief engineer, vacated by Line.

Line will be responsible for developing improvements in handling sales orders and customer relations.

Friedman's responsibilities will be broadened to include many of the activities which he performed as a member of the sales subsidiary in connection with development of new design.

A new SPARK → *from Page 50*

Interviewed were R. L. Vicenzi, senior project engineer (gas), and P. F. Neess, manager of market research, Controls Co.

If the main burner flame ignites in the normal manner, the flame detector reacts to the presence of the flame and in approximately five seconds will switch to the "hot" contact. This de-energizes the ignition transformer and discontinues the spark. This action also opens a by-pass circuit around a resistor which is incorporated in the safety lock-out switch unit. This interlock resistor being in series with the safety lock-out switch heater now limits the current through the heater and keeps it from developing sufficient heat to cause it to lock-out.

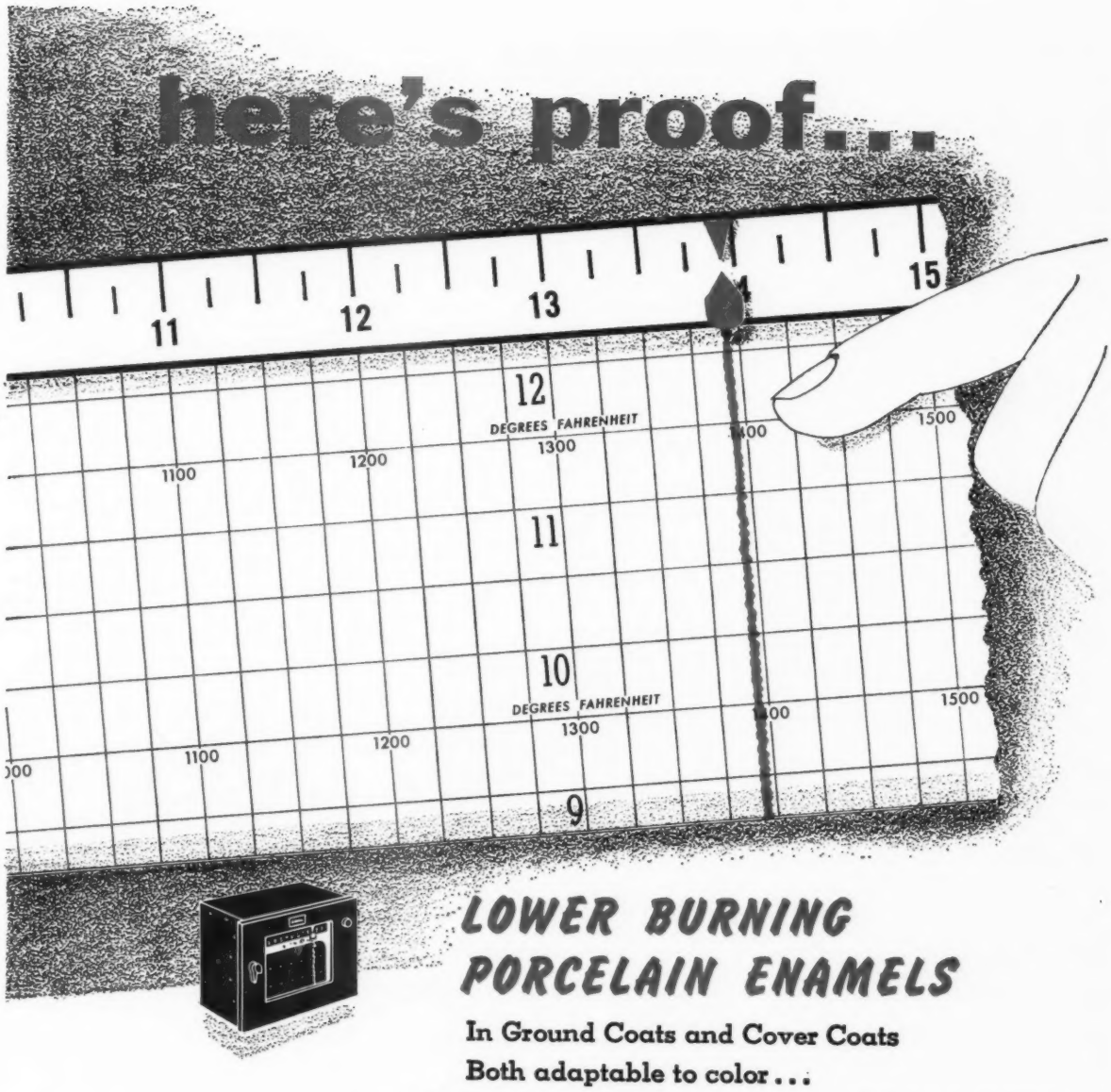
Should the main burner flame fail to ignite, the flame detector switch would remain in the "cold" position continuing the spark and also continuing to by-pass the interlock resistor keeping it out of the circuit. The safety lock-out switch heater now remains in the fully-energized condition and in approximately 20 seconds will act to make a contact completing a by-pass circuit around the main burner control valve, causing the valve to close.

The valve remains closed as long as the flame detector remains in the "cold" position and the safety lock-out switch heater is energized. The system is automatically reset when the timer period expires or the door switch opens the circuit for a sufficient time to allow the safety lock-out switch heater to cool and open the by-pass circuit around the valve. In each repeated try for ignition, the spark is present.

In addition, a normally-closed contact is provided in the safety lock-out switch which opens the circuit to the heater periodically during the time the system is energized and the switch is in the "lock-out"' position. This acts to reduce the continual build-up of heat during the lock-out period and reduces the time required for the unit to be automatically reset for the next cycle. During this cycling action, the main valve is kept from opening by the by-pass contact which must open before the cycling can start.

In normal operation, the system re-cycles through an ignition period for each call for heat by the thermostat or operation of the door switch.

As indicated, this new unit is being offered as an ignition system for gas clothes dryers. It seems entirely logical, however, that gas appliance manufacturers and the gas industry will have its eye on this development for other possible future applications, for it would appear that systems of this type may have worthwhile potential for applications in other gas burning equipment.



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NEWS about Suppliers

Predicts 25 Per Cent Increase in Steel Output for 1959

Logan T. Johnston, executive vice president of Armco Steel Corp., has predicted that the nation's steel industry would produce about 25 per cent more steel in 1959 than it did in 1958. He forecast a steel demand next year of about 108 million tons as he addressed a National Industrial Conference Board marketing session at the Waldorf Astoria Hotel in New York.

"The balance has now shifted to the side of recovery," Johnston said, "not enough to expect another boom in the near future, but certainly enough to make us all feel considerably better than we did six months ago."

Johnston predicted that steel needs in the automotive, appliance, container, and other markets will all move higher next year.

Shell to Increase Epon Resin Production

Shell Chemical Corp. will begin construction of a phenol unit at its Houston plant early in 1959.

Most of the unit's production will be used to manufacture Bisphenol A, one of the two principal ingredients in the company's Epon resins, according to C. W. Humphreys, manufacturing vice president. Shell Oil Co. will also take a share of the phenol.

The unit, which is scheduled to be completed in late '59, will produce acetone as a co-product, Humphreys said.

Honeywell Acquires Marion Electrical Instrument

Minneapolis-Honeywell Regulator Co. has purchased the Marion Electrical Instrument Co., Manchester, N. H. The latter firm designs and produces precision electrical measuring and indicating panel meters and similar products for a wide variety of commercial customers. The firm, founded in 1937, has approximately 400 employees.

According to Paul B. Wishart, Honeywell president, Roscoe A. Ammon, who has been president of Marion Instrument for several years, will continue as head of the operation, with no change in the present administrative, sales, and production organization.

New Addition to Dreis & Krump Plant

Dreis & Krump Mfg. Co., Chicago, is meeting the increasing need for more assembly space for its larger press brakes and straight-side-type presses by erecting a new building. The structure will be 55 feet wide and 300 feet long, and will be serviced by a 25-ton overhead crane.

Vulcan to open Shipping Pail Plant in Canada

A plant to produce steel shipping pails used for the packaging and shipment of paints, chemicals, adhesives, oil, and similar products, will begin production this month in Vancouver, British Columbia, Canada. The plant is reported to be the first steel pail manufacturing facility in Canada's Pacific Coast, according to a joint announcement by Vern I. McCarthy, president, Vulcan Containers, Inc., Bellwood, Ill., and Norman G. Bernecker, president, Vulcan Containers Limited, Toronto, Ontario, Canada.

Youngstown Reports Steady Order Increase

A steady improvement in steel orders, which started in August, is expected to continue throughout 1958, according to J. L. Mauthe, chairman of the Youngstown Sheet and Tube Co.

Addressing the Los Angeles Society of Security Analysts, Mauthe said, "We do see signs of improvement in our business. After a flurry of orders for delivery in June, prior to an anticipated price increase, July shipments fell off markedly, making it the worst month of the year. August shipments showed a gratifying increase over July, and this steady improvement has continued on into September. We are now operating at a rate of about 65 per cent of capacity, and we would expect to continue at least at this level during the balance of the year."

Mauthe added that it is "gratifying" that this improvement has been felt in nearly all product lines, and has come from nearly all steel-consuming industries.

Udylite Launches "Project Alert"

The Udylite Corp., Detroit, Mich., has begun a program called "Project Alert" with the purpose of stimulating industry to apply fresh creative imagination, better production methods, and new equipment to help obtain more

Pemco Dedicates Baltimore's First Certified Industrial Heliport

At a dedication luncheon September 17 in the Pemco Corp. executive suite, Charles B. Allen, chairman, State Aviation Commission of Maryland, presented an official Maryland Heliport Certification to Charles P. Lohman, vice president of marketing for Pemco, declaring the company's new heliport, adjacent to its plant, the first in the city meeting prescribed requirements, and operating under state safe-approach regulations.

Herbert Turk, president of Pemco, cited the progress and speed of passenger and freight service brought to major urban areas by increased air travel, and pointed specifically to the helicopter as the last link between company and customer.

The inauguration of direct helicopter service provides for one-day delivery of special rush orders to practically any part of the country. Within eight minutes after the shipping department calls, a helicopter can be at the Pemco Eastern Ave. heliport. After loading as much as 800 pounds of payload, the 'copter can deliver it directly to the air express ramp at Friendship Airport in another eight minutes, ready for loading on its regular freight flight. The service is also to be used for customer and company personnel.

John Zingor, Eastern District sales manager for Pemco Corp., departs on maiden helicopter flight from the newly-dedicated Pemco Certified Industrial Heliport, the first of its kind in Baltimore.

prosperous business conditions. Promotion of the program began early this fall with advertisements in several magazines, with information from C. H. Reeme, president, and "Project Alert" lapel buttons.

The project suggests a change in attitude, according to Reeme. This change, he continues, primes salesmen to tell customers about the real advantages of buying now, alerts employees to discover ways to cut production costs by streamlining organization, and finds new methods.

Battelle Scientist Sees Future for Water-based Paints

The use of water-based paints for auto bodies and other applications is among the results expected from research now in progress, according to a scientist at Battelle Memorial Institute. Also likely, according to Ernest R. Mueller of the Columbus, Ohio research center, is the development of clear varnish thinned with water and a solvent.

One large automobile maker is already using a water-thinned primer for auto bodies, it is reported. Research on water-based paints is progressing toward five major developments: rain resistance; satisfactory adhesion; inhibition of the rusting of iron and steel by water-content coatings; formulation of glass decorator enamels; and development of a hard, mar-proof baking enamel. When these objectivese are met, wide new areas for these paints will be opened, Battelle reports.

U. S. Steel Installs New Metallurgical Test Lab

Among machine tools used in the machine shop area of the new laboratory are abrasive cut-off machines, power saws, lathes, hydraulic cylindrical grinders, drill presses, and milling machines.

Geared to the ever-higher standards of performance required of modern steels, a new metallurgical testing laboratory has been installed by United States Steel Corp. at its Duquesne Works, it has been announced recently by J. W. Price, Jr., plant general superintendent.

The laboratory, said to be one of the largest and most complete units of its type in the steel industry, is being used to conduct rigid tests on alloy, stainless, and special carbon steels produced in the plant's electric arc and open hearth furnaces, and rolled on its primary and finishing mills. Some applications in which these steels are used include manned aircraft and guided missiles, nuclear reactor vessels, electric power generators, etc.

Tax Laws Should be Modernized, States Inland Executive

At the 6th annual Upper Peninsula conference on personnel management, held recently at Ishpeming, Mich., Russell L. Peters, financial vice president of

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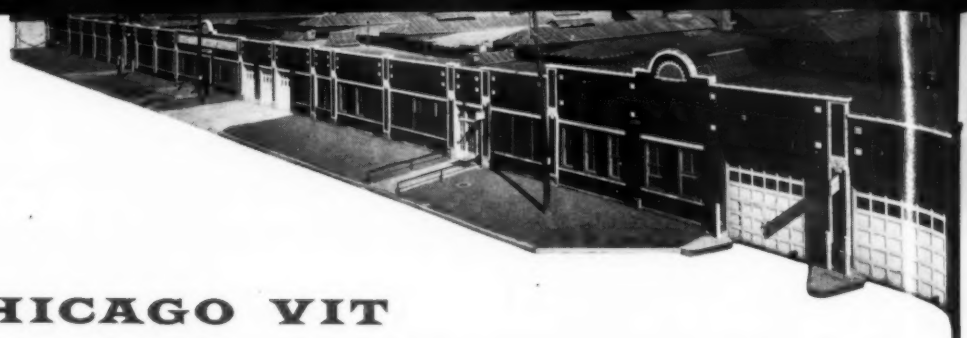

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A section of the main room of the Research and Development Laboratory

Chicago Vitreous CORPORATION

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Inland Steel Co., and chairman of its finance committee, said that American industrial growth will be "greatly retarded," and the free enterprise system will lose prestige in the world battle of ideologies, if tax laws are not modernized with more realistic depreciation allowances so that corporations can provide for the replacement of worn out equipment, and for growth.

Present tax regulations, Peters said, allow a corporation to charge against production only the original cost of equipment used up. In the case of equipment purchased as much as 25 years ago, it can only be replaced at three times the cost, and will cost five times as much in another ten years if the inflationary trend continues.

National-Standard Acquires Cross Engineering

National-Standard Co., Niles, Mich., has acquired the operating assets of Cross Engineering Co., Carbondale, Pa., and will operate it as the Cross Perforated Metals plant, according to T. H. Pearce, executive vice president of National-Standard.

The present management of Cross will continue in the new organization, which will be under the overall direction of W. E. Haarbauer, manager of the Reynolds Wire division.

National-Standard manufactures tire bead wire, high carbon and stainless steel spring wire, "Copperply" (copper-plated steel wire), and other specialty wires. It has plants in Niles, Akron, Los Angeles, Guelph, Ontario, Canada, and in Kidderminster, England.

Universal Steel New Distributor for Olin Aluminum

Universal Steel Co., Cleveland, Ohio, has been appointed a distributor for Olin Aluminum, Hollis B. Cranmer, manager of aluminum distributor sales, Metals division, Olin Mathieson Chemical Corp., announced recently.

The Universal firm will be distributor of Olin Aluminum throughout Ohio, with main office and warehouse at 6600 Grant Ave., Cleveland. The new distributor has facilities for slitting, roller-leveling, square shearing, and sawing.

Concurrently, Seneca Steel Service, Inc., Buffalo, N. Y., has been appointed a distributor for the firm. Seneca Steel Service will distribute Olin Aluminum in western New York, northern Pennsylvania, and Canada. General offices, plant, and one warehouse are situated at 1050 Military Rd., Buffalo, and a second warehouse at 1400 William St., Buffalo.

METAL PRODUCTS STATISTICS

a current report on available production, shipment and sales figures for important products in the appliance and fabricated metal products manufacturing field

		1958 (Units)	1957 (Units)	% Change
Gas Water Heaters	August	218,400	210,300	+ 3.9
	Jan.-Aug.	1,776,000	1,735,800	+ 2.3
Gas Ranges, Built-In	August	21,200	17,000	+24.7
	Jan.-Aug.	134,600	122,600	+ 9.8
Gas Ranges, Free-Standing	August	134,800	165,600	–18.6
	Jan.-Aug.	1,014,400	1,168,300	–13.2
Gas Furnaces	August	88,600	74,100	+19.6
	Jan.-Aug.	476,400	426,100	+11.8
Gas Fired Boilers	August	14,600	12,000	+21.7
	Jan.-Aug.	66,900	61,300	+ 9.1
Gas Conversion Burners	August	19,500	23,000	–15.2
	Jan.-Aug.	80,300	88,700	– 9.5
Electric Refrigerators	August	245,900	240,500	+ 2.2
	Jan.-Aug.	2,010,600	2,362,300	–14.9
Electric Freezers	August	101,400	86,000	+17.9
	Jan.-Aug.	714,700	666,300	+ 7.4
Electric Ranges, Free Standing	August	47,800	58,500	–18.3
	Jan.-Aug.	505,300	615,700	–16.5
Electric Ranges, Built-In	August	33,200	27,300	+21.6
	Jan.-Aug.	318,200	273,500	+16.4
Electric Storage Water Heaters	August	60,800	60,500	+ 0.5
	Jan.-Aug.	537,300	517,200	+ 3.9
Electric Dishwashers	August	28,400	36,700	–22.6
	Jan.-Aug.	245,600	255,400	– 3.8
Electric Food Waste Disposers	August	47,500	47,300	+ 0.4
	Jan.-Aug.	379,300	343,600	+10.4
Combination Washer-Dryer	August	13,659	11,980	+14.0
	Jan.-Aug.	86,339	114,095	–24.0
Washers, Automatic & Semi-	August	246,479	249,517	– 1.0
	Jan.-Aug.	1,638,704	1,832,829	–11.0
Washers, Wringer & Others	August	80,306	84,831	– 5.0
	Jan.-Aug.	542,961	600,185	–10.0
Electric Dryers	August	72,350	77,662	– 7.0
	Jan.-Aug.	398,683	458,159	–13.0
Gas Dryers	August	37,483	39,393	– 5.0
	Jan.-Aug.	173,208	201,282	–14.0
Vacuum Cleaners	August	280,226	241,218	+16.2
Metal Furniture	August	*	*	– 1.0
	Jan.-Aug.	*	*	– 3.0
Television	July	334,200	465,285	–28.5
	Jan.-July	2,335,188	2,969,251	–21.3
Radio	Jan.-July	3,441,388	4,018,236	–14.4
Steel Barrels & Drums	July	2,663,029	3,071,404	–13.2
	Jan.-July	18,103,905	21,701,275	–17.0
Steel Pails	July	6,702,727	7,141,825	– 6.2
	Jan.-July	41,936,149	45,399,998	– 7.6
Typewriters	July	102,037	*	*
	Jan.-July	598,316	*	*

* Not Reported.

Sources for this information: Gas Appliance Manufacturers Association, National Electrical Manufacturers Association, American Home Laundry Manufacturers Association, Vacuum Cleaner Manufacturers Association, National Association of Furniture Manufacturers, Electronic Industries Association, Air-Conditioning and Refrigeration Institute, and U.S. Dept. of Commerce.

Service is big business—$16 billion a year

(Continued from Page 31)

do their own servicing. In addition, their success is in direct relation to the kind of service that each renders.

Service, a $16 billion business

R. S. Geran, general service manager, Kelvinator Div. of American Motors Corp., strongly feels that "*service must be looked upon as a business and should stand on its own feet.*" He said that it was his finding that the service volume throughout the United States, including automobile servicing, etc., is a $16 billion business annually. In a few years it could very well reach $30 billion. Geran feels that, if service is treated as a separate functioning business, it will best serve the interests of the consumer and manufacturer.

A need for proper service training in the appliance industry is definitely present. He cited the refrigeration industry as one that is well geared to train servicemen, but there is still a need for more competent servicemen. If this is true in the refrigeration industry, it certainly would be more so in the appliance industry generally, Geran concluded.

Some engineering aspects

A brief run-down of some basic design considerations that must be solved by the appliance engineer was given by E. G. Lipski, manager, home laundry engineering, Philco Corp., appliance division. Lipski showed how spinning vibration is minimized by the application of dampers and springs. A live demonstration was staged for the audience with a specially-built laboratory tub and motor unit that was stripped of all components save the drive unit, so that spinning experiments could be made. The demonstration model could be readily controlled to spin with a rigid mount, spring mount only, and spring and damper arrangements. By placing a five-pound imbalance weight in the tub, Lipski demonstrated that the rigid mount would promptly throw the machine impossibly out of line. Then with the spring, he showed how vibration was minimized to some degree, and then, finally, he showed how vibration was further reduced by springs and dampers. The distance of vibration from side to side affects the size of cabinet, he said.

The most impressive part of Lipski's talk was the live demonstration of a Philco Duomatic washer-dryer going through a complete dismantling for servicing. The model used had all of its controls mounted behind the instrument panel for quick and easy accessibility by any serviceman. The entire cabinet was removed in a matter of seconds to demonstrate to the audience that any component, such as pumps and water level controls, can be quickly serviced in the consumer's home.

Lipski told the audience that the most important factor for improving service, from the standpoint of engineering, was *teamwork* between the service departments and engineering to incorporate changes that the service department feels are necessary to simplify servicing.

One of the outstanding points brought out in the talk by Jack D. Lee, manager, laundry equipment department, Westinghouse Electric Corp., electric appliance division, was that an excellent service program was developed at Westinghouse by incorporating one important step. This step was to supply 100 pilot models, six months prior to introduction to dealers, so that the service department could formulate well thought out service procedures on the new appliance long before the appliance reached the market. In this plan, Westinghouse allocated washers to families having three or more children, so that actual operation and service could be observed in use. This procedure, Lee stated, helped a great deal in formulating service procedures and instructions for the service department.

Engineering a new food automat

(Continued from Page 27)

returned) is used, operated by impulses generated by the size of the coins. The mechanism does not make change.

The most important design feature deals with mechanisms. The main component parts are: the outside shell; the main door; spot weld and heliarc welding; and the lower front panel (with selector knobs) made as a sub-assembly. It was designed for ease of assembly and accessibility. It was further designed to keep proper temperature, with a vapor seal to keep out moisture. There is double wall insulation (4-inch fiberglass, 2-lb. density.)

To prevent ice and frost formation on the working mechanism in sub-zero areas, a forced convection refrigeration system is used. It is designed for automatic defrosting, using F22 as the agent.

The second part is the internal dispensing unit, designed to dispense in groups of three, (there being a total of five units), giving a total of 15 food chutes which allow as many different selections of items. The unit is manually operated and electrically actuated.

The refrigeration evaporator is made of ½ inch OD L-type copper, with ⅜ inch OD bends and locked aluminum fins spaced for low temperature.

The outside appearance was designed to catch the worker's eye, with the manufacturers name at the top of the unit, and colored pictures of tempting food dishes below. They are finished in baked enamel grey "hammertone."

The warming oven with fixed thermo control has 14 removable shelves. Three food packages can be laid on each shelf. The cold rolled steel and aluminum ovens have rock wool insulation to keep the food "just right."

The Montag food automat and warming oven have already proved themselves in the field. At present, the company is working up to a goal of 200 units a month.

Mechanized press line

→ *from Page 23*

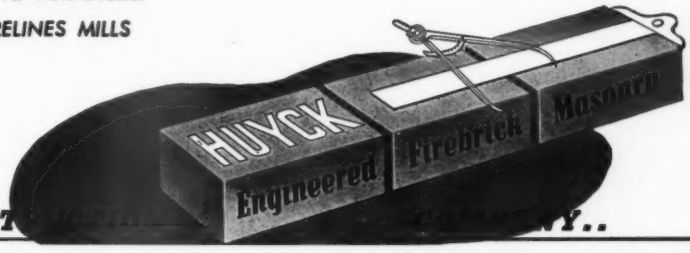
press is stopped before pileups occur.

If production requirements fall below that normally attained by using presses from both sides, the line can be run so as to produce only rights or only lefts along one side or the other for any given period. Subsequent shifting to the other side, for an equalizing run, balances right and left output. Aside from the use of belts, as explained, the only mechanized shifting of the stampings in the setup is that done by the double-gripper mechanical hand that unloads the draw press. Further mechanization would be possible but the shape of the parts and the various positions in which they must be located are such that any potential savings that might be attained do not warrant the cost.

Safety for operators is promoted by using air-operated ejectors to move the stampings into safe position for manual handling. These make it unnecessary for any operator to place his hands where they might be caught between any die components when dies close.

HUYCK *FURNISHES FIREBRICK MASONRY TO BUILD, REBUILD AND REPAIR ALL TYPES OF: ENAMELING FURNACES . . . FRIT SMELTERS . . . ALUMINUM, BRASS, LEAD SMELTERS . . . FORGE FURNACES . . . HEAT TREATING FURNACES.*

HUYCK *LINES AND RELINES MILLS*



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SUPPLIER PERSONALS

A. S. Ault, who has been vice president and general manager of Chicago Vitreous Corp., Cicero, Ill., has been named president. He succeeds Wm. Hogenson who, with E. Hogenson, executive vice president, will retire November 30.

Chicago Vitreous, a division of Eagle-Picher Co., operates a frit department for the production of porcelain enamel frits, and a steel building department for the manufacture and erection of porcelain enameled gasoline service stations.

T. R. Evans has been named sales manager for the Fine Metals and Chemicals division of Electro Metallurgical Co., according to J. C. Douglas, vice president, technology. Electromet, a division of Union Carbide Corp., is a manufacturer of ferro-alloys and metals for the iron, steel, and nonferrous industries, a producer of titanium sponge, and a producer of pure metals, metal chemicals, etc.

James C. Richards, Jr., has been named vice president, sales of B. F. Goodrich Industrial Products Co., it has been announced by C. O. DeLong, president of the company, a division of The B. F. Goodrich Co., Akron, Ohio.

Amchem Products, Inc., (formerly American Chemical Paint Co.,) has announced the appointment of **Jack M. Price** as assistant sales manager, metalworking chemicals division. He will assist in the operation of the central sales office, and in the direction of the central staff and field sales activities.

RICHARDS

PRICE

H. G. Bixby, president of Ex-Cell-O Corp., has accepted an appointment to the board of directors of Detrex Chemical Industries, Inc., according to A. O. Thalacker, Detrex president.

George M. Seib, formerly secretary of Oakite Products, Inc., has been appointed vice president of the company, which manufactures industrial cleaning and metal treating compounds. **Erwin H. Steif,** who was Seib's assistant, has been promoted to the post of secretary.

SEIB

STEIF

The promotion of five men has been announced by Armco Steel Corp. officials.

R. W. Davison, director of sales planning and coordination, has been appointed assistant to executive vice president; **John N. Lind,** general traffic manager of The National Supply Co., now an Armco subsidiary, will become director of transportation for the company, succeeding E. H. Dorenbusch, general traffic manager, who retired August 31st after more than 46 years

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BURNING TOOLS
25 years of service to the Porcelain Enameling Industry
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of service with the company; **R. W. Kelly,** assistant general traffic manager, has been promoted to general traffic manager of the Armco division; **William Rehse** has been appointed traffic manager, service; and **D. F. Earhart** promoted to traffic manager, rates, for the Armco division.

Kenneth J. Carson has been named vice president and Atlantic District manager of Interchemical's finishes division, according to Charles W. Scott, division president.

Donald M. Strathearn, vice president of Controls Co. of America, has been appointed director of sales for appliance and automotive controls. He formerly was director of engineering for appliance and automotive controls.

CARSON

STRATHEARN

Jack H. McWilliams, geological engineer for Aluminum Co. of America since 1942, has been appointed manager of ore exploration for the company's mining division.

Jessop Steel Co., Washington, Pa., specialty steel producer, has named **William P. Youngquist** as assistant to vice president, commercial, "to help accelerate the sales of tool, die, composite, and specialty steels."

The appointments of **G. Findley Griffiths** as executive president, commercial, and **Joseph H. Myers** as vice president, marketing, Acme Steel Co., Chicago, were announced recently by Guy T. Avery, president of the firm.

Griffiths will be directly responsible for determining sales polices, pricing of products, products to be marketed, as well as customer relations. Prior to joining Acme in 1950, he was vice president and general sales manager of Sharon Steel Co., Sharon, Pa.

Myers will be responsible for coordinating all marketing activities of the sales divisions of the parent company with other management functions, such as manufacturing, advertising, market research, and product development.

GRIFFITHS

MYERS

William J. Harrington has been named an industrial salesman of Fairmont Aluminum Co., a subsidiary of Cerro de Pasco Corp., it was announced by W. Bradley Blair, vice president in charge of sales. Harrington will be associated with Fairmont's Chicago sales office.

Henry C. Segerstrom, chairman of International Paper Company's packaging committee, passed away suddenly on September 22. He was 55 years old.

F. I. LeVeque, president of Anchor Steel & Conveyor Co., has announced that **Robert W. Shaneck** will head the recently-established sales office of the firm in Dayton, Ohio. Central and southwestern Ohio will be served from the Dayton office, located at 2801 Far Hills Ave.

Editor's Mail → *from Page 43*

Likes Home Laundry section

Gentlemen: I've just had a look at the September issue of MPM's "Special Home Laundry Equipment Industry Section." This 12th annual special section is just terrific.

As a home laundry specialist, I just must have a copy of this special section for my files. I want the opportunity to study those engineering features you've presented so graphically; also the future of the home laundry. Please send me a copy of that special section for my very own. I enclose a check for $1. Thank you so much.

Mrs. Maurine Miller Welch
Home Economics
Columbus, Ohio

More on Home Laundry section

Gentlemen: Several months ago, Mr. E. G. Lipski of the Philco Home Laundry Department wrote an article on the new Philco Automagic washer.

This article was, I believe, issued in either the June or July issue of your magazine and, if possible, I would very much appreciate your forwarding to me 25 copies of this article. Thank you in advance for your assistance.

Miss Ingrid Hoelken, Secretary
to Mr. R. D. Thomas
Philco International Corp.
Philadelphia, Pa.

The article referred to is "Philco's 'Automagic' washer," which appeared in the special Home Laundry section of the September issue of MPM, page HL-6.

Right man — wrong initials

Our editors had exceptionally fine cooperation from Mr. *H. E.* Van Scoyk, assistant chief engineer at Frigidaire, in connection with the development of the feature "Simplify controls, improve drive mechanism on Frigidaire (1959) washer."

Our apologies, therefore, to Mr. Van Scoyk for the publishing error which resulted in his initials being presented incorrectly as "E. P." in a photo caption accompanying the article, and in our editor's mail column for October where a personal comment was presented.

Planishing article of interest

Gentlemen: We've just finished reading your published article entitled "Automatic weld roll planishing speeds container production," September issue, Volume 15, No. 9. We were delighted, to say the least. The article was well written, organized, and the cuts were apropos.

This type of article would possibly help our sales effort. Would you please inform us about the possibility of obtaining reprints? If so, please quote us on a quantity of 2500 — single page, no cover.

H. L. Meredith, Vice President
Airline Welding and Engineering
Hawthorne, Calif.

Grateful for bibliography

Gentlemen: We acknowledge with thanks the receipt of the bibliography for the article on summer and autumn humidity and its effect on porcelain enameling.

D. Whale, Department of Technical Information
Tube Investments Limited
Birmingham, England

New Products

→ *from Page 50*

Conversion Coating Machine

A fully-automated, straight-line conversion coating machine has been recently introduced which is recommended for blackening, phosphating, bright dipping, pre-cleaning, and pickling.

The machine, called "Convert-O-Matic," is said to provide maximum cycling flexibility by settings of selective timers for each treatment tank. Once set up and turned on, the machine is said to require no personnel to operate.

For further information, contact Dept. MPM, Hanson-Van Winkle-Munning Co., Church St., Matawan, N. J.

Crowned Finishing Wheel Does Work of Two Wheels

Now a concave surface with radius as small as 2 inches can be polished with a standard 5-inch diameter inflated finishing wheel, according to the manufacturer. A new coated abrasive band that is crowned in the center makes this possible.

The new band is designed for use with a Nu-Matic Model 525 which is 2½ inches wide. When inflated, the wheel has a major diameter of 6 inches at the crown. Crowned bands for the Model 525 are available in both medium and fine grits.

Having a compound curvature, the new wheel will handle many finishing jobs that ordinarily would require the use of two wheels and two portable tools, according to the manufacturer. Also, sidewall wear that results when working on areas that are difficult to reach is said to be eliminated. This wheel is particularly suited for spotting work.

A Valcore Model 525 and a crowned abrasive band are available for a 25-day free trial. For further information, contact Dept. MPM, Nu-Matic Grinders, Inc., 8224 Carnegie Ave., Cleveland 3, Ohio.

PHOTO COURTESY CLAD-REX CORP.

These store showcases made by Weber Showcase & Fixture Co. have side and end panels of pre-finished vinyl-on-metal.

Refrigerated case manufacturer uses vinyl-on-metal pre-finished panel

NEW PRE-FINISHED PANELS for refrigerated cases, offered in a variety of colors, are being used by Weber Showcase & Fixture Co., Inc., Los Angeles and Grand Rapids, Mich.

Front and side panels of these cases are made of vinyl-on-metal with a soft, textured effect in a choice of colors. Customer acceptance has been excellent, according to Karl Weber, president.

"There is a great demand for color in food store design," he explained. "Our Texturetone cabinets can match or blend with nearly any wall covering. They provide an individuality to each installation."

Texturetone is the company's name for the new pre-finished panels, procured from a company specializing in pre-finished panel production. They consist of a vinyl skin permanently bonded to steel or aluminum. Weber currently offers refrigerated cases in 12 colors from stock, and others on special order.

According to Weber, the vinyl skin withstands wear and abrasion, is stain proof, and also has a tendency to hide dents caused by abnormal abuse. These qualities are especially important in heavy traffic supermarkets, he pointed out, where bumping of shopping carts can mar equipment so quickly.

In Weber's manufacturing operations, he continued, vinyl-coated panels are sheared, crimped, bent, drilled, and punched with standard tools without separating the vinyl from the metal.

A variety of patterns and finishes is available from suppliers of the pre-finished panels, including burnishes, non-reflective mattes, leather and wood grains, and textile effects.

Double Crank Gap Press

Designed for automatic feeds and greater convenience in handling large or irregular sheets, the double crank open back gap press features welded steel construction and a patented drum-type friction clutch, electrically controlled.

Except for its cut-back housings, the press embodies all the essential features of standard straight-sided double crank presses. Its slide is provided with power adjustment, is air-counter-balanced, and has a stroke of 10″ and 5″ adjustment. Shut height is 22″.

For further information, contact Dept. MPM, The Cleveland Punch & Shear Works Co., 3917 St. Clair Ave., Cleveland 14, Ohio.

LARGE enough to handle big jobs—

SMALL enough to give every job close personal attention

Charles Mundt & Sons are specialists in perforated metal design and production. Through 89 years of experience we have gained the "know-how" and developed the organization and production facilities to handle the big perforating job. Yet we have never outgrown the basic policy of maintaining a close working relationship with our customers. Our organization provides you with the best in service and personal attention and you deal direct with the people who have the full responsibility for your satisfaction.

With perforated metals you have a wide horizon to explore. New design opportunities are limited only by the imagination. We have ideas gained through our many years as specialists in the use of perforated metals. We'd like to share these ideas with you.

Perforating Specialists of All Types of Metals

Write for your free copy of "Perforated Metals for Every Purpose".

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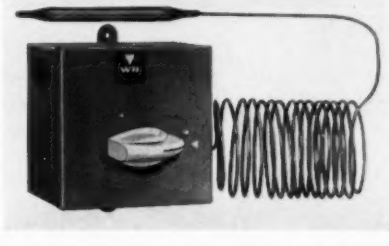
Vending machine control to meet ordinance requirements

A sanitation ordinance and code to be enforced by the United States Department of Health, Education and Welfare, and now applying only to vending machines in government buildings, and on government bases, requires that perishable foods or ingredients within a vending machine shall be maintained at a temperature not higher than 50° F. or, in the case of heated materials, a temperature not lower than 150° F. This requirement calls for special controls designed for this purpose.

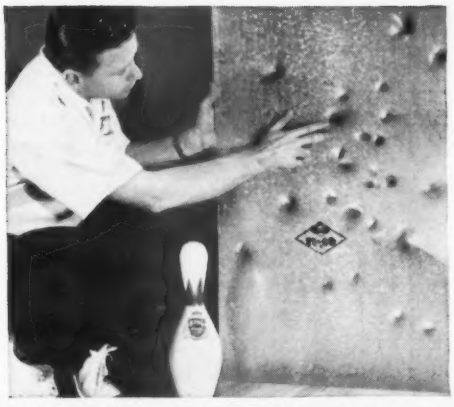
A new control currently being announced by White-Rodgers Co., St. Louis, Mo., is designed to meet the requirements for maintaining a temperature no higher than 50° F. on refrigerated foods or ingredients (cream, etc.)

The physical characteristics of this control, 2450-1, consist of a thermostat, a 30-minute mechanical timer, and a contact override mechanism, mounted in a single enclosure.



In operation, the control is designed for vending machines which maintain foods at temperatures below 50° F. It is the purpose of this control to lock out the coin mechanism, and render the machine inoperative, if the temperature in the refrigerated compartment rises to 50° F. The only exception to this is a period of 30 minutes after the machine is opened for loading or other servicing. During this interval, a timer in the control holds the thermostat contact closed so that, should the temperature rise to 50° or above, the machine will continue to operate. At the end of the 30 minutes, if the temperature is not below the "cut-in" temperature of the thermostat, the timer will release the contacts, opening the switch. Manual resetting is then necessary.

The 2450-1 unit can be mounted anywhere in the non-refrigerated compartment of a coin-operated machine.



Three-time ABC winner, famous bowler BILL LILLARD slams in strike after strike sending ball and pins flying against piece of TI-CO set up in pit. Close up examination by Bill shows plenty of punishment but no flaking. TI-CO's zinc coating rolled with the punch!

BOWLING CHAMP FAILS TO FLAKE INLAND TI-CO®!

Switch to **TI-CO** Non-Flaking Galvanized saves manufacturers up to 15% in Production Costs.

A well-known garage door manufacturer dispensed with plating operations—reduced costs 10%. A leading furnace manufacturer saved $20 per thousand parts produced by eliminating cleaning and painting. A company making roller gravity conveyors cut out similar operations. These are just a few of many case histories of manufacturers who realized important savings and improved their product when they started using TI-CO Galvanized Sheets.

Whenever a product requires the strength of steel, plus corrosion resistance, Inland TI-CO is the most satisfactory . . . the most practical . . . the most economical material to use. That's because TI-CO is produced with a zinc coating that will not flake even under the toughest conditions. The coating stretches with the base metal during fabrication. Deep drawing, brake or roll forming, crimping, stamping, lock-seaming even severe spin-drawing . . . TI-CO takes them all in stride with no flaking or peeling. With TI-CO there's no need for costly dipping or touching up. And the uniform, bright spangled finish adds to the over-all attractiveness of the product.

If you're manufacturing or designing a metal product that requires corrosion resistance, consider TI-CO Galvanized Sheets. Manufactured in coils or cut lengths up to 60″ widths, gauges 8 to 30 inclusive. Consult your local steel distributor or Inland sales representative. Write today for a free informative booklet on TI-CO.

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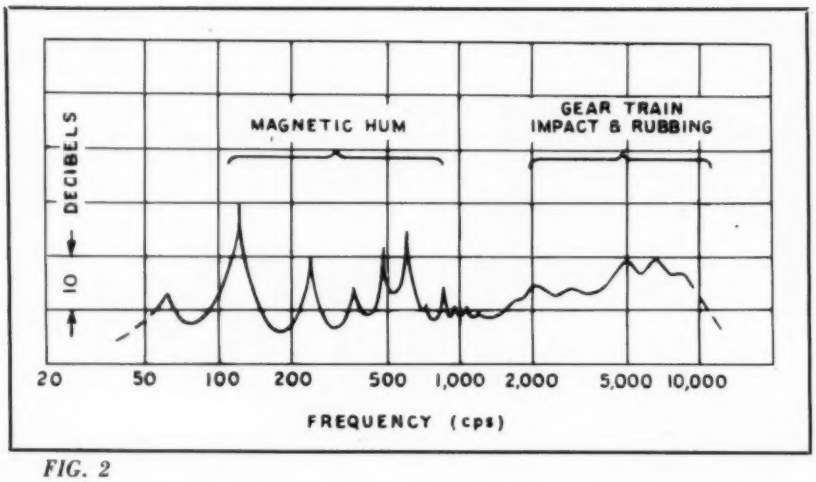

FIG. 2

→ *from Page 25*

Directionality of noise a clue

The radiation pattern or directionality of the noise may give some clues relative to noise production. If the highest sound level is in the exhaust air, it is due to flow modulation or fan noise; if the highest sound level is on one side of a machine, it will be due to equipment fastened to that side. A survey of this type led to the stiffened base plate mentioned earlier. Another useful experimental procedure is to eliminate various parts and see how they affect the noise; running the fan and the compressor separately on a window air conditioner will quickly show which is the worst offender. Using both A.C. and D.C. to run a series motor will show whether electromagnetic forces are due to line frequency, motor characteristics or interaction between them; for an induction motor a similar check may be made by changing line frequency over the range from 50 to 70 cps[10]. This is also related to the technique of temporary modification of parts such as by damping, stiffening or mass loading. It is often useful to check the effect of making modifications that would not be practical for the final design.

Noise control achieved in the original design

Sonance Design, design for proper sound, must start with the first design ideas. Improper original design may make it impossible ever to achieve satisfactory control at a reasonable price. As in most design problems, the most useful information is experience. A designer should try to incorporate those ideas that have led to good sonance design and avoid those that have given bad results. A good fundamental background in acoustic theory can often help the designer to decide the qualitative effects of design changes. This will show him why heavy partitions or walls cut down sound transmission and why double walls are better; it will also tell him why wall treatment will not reduce the noise in the vicinity of a machine, etc.

There are certain quantitative calculations that are useful in advance of design. The sound level from fans is fairly well known and the attenuation in ducts can be calculated[11]. It is possible to calculate some of the circumstances that lead to high motor noise. There are a few other cases of this general type but there are not many times when it is possible and profitable to make quantitative calculations in the sonance design of small appliances.

It is impossible to establish, in advance, the environment in which an appliance will operate. In fact, it may be quite different for different buyers of the same product. For this reason sound pressure levels measured under free field conditions are not sufficient. Recent work shows that total sound power measurements[13] with a frequency spectrum will give the characteristics of most machines although it may be desirable to give the directionality in some cases.

Once a prototype has been designed, there is often a problem of suitable modification to improve the sound characteristics. The principles can be derived from an understanding of the elements of noise production listed earlier. We can attempt to reduce the force by balancing or reducing magnetic fluctuations. We can reduce the response to a vibratory force by making the part heavier, or, if at resonance, by detuning or damping. We can attenuate the noise or vibration by duct treatment or by vibration isolation. We can reduce the effectiveness of radiation of noise by damping or stiffening the radiating area; and finally, we can improve the character of the noise by selective suppression of certain frequency bands or by reducing rattling.

We see from the above examples that proper measurement and specification of noise makes the problem of sonance design simpler. There are certain fundamental principles of design which make control easier; and finally, application of these same principles indicates the proper means for control of noise in already designed equipment.

Bibliography

1. Stevens, S. S., *J. Acous. Soc. Amer.*, 28, p 807 (1956)
2. Robinson, D. W., *Acustica*, 3, p 344, (1953)
3. Beranek, L. L., *Noise Control*, Jan. 1957, p 19
4. Harris, C., *Handbook of Noise Control*, McGraw-Hill, 1957, 14-13
5. ibid 5-16
6. Beranek, L. L., *Acoustic Measurements*, Wiley, 1950, p 304
7. Beranek, L. L., *Noise Control*, Jan. 1957, p 19
8. Fehr, R. O. and Wells, R. J., *Noise Control*, 1 p 30 (Jan. 1955)
9. "Fan Engineering", Madison, R. D., Buffalo Forge Company, 1949 p 311
10. Muster, D. F. and Wolfert, G. L., *Trans. AIEE*, Jan. 1956
11. Beranek, Reynolds, and Wilson, *J. Acous. Soc. Amer.*, 22, pp 313-321, March 1953
12. Muster, D. F., *Product Engineering*, December, 1954
13. Wells, R. J., *Trans. AIEE*, Dec. 1955, pp 1170-1173

Presented at Ninth Annual Appliance Technical Conference of the Domestic Appliance Subcommittee of the A.I.E.E., Chicago, May 26th.

New finishing system

→ *from Page 29*

paint makes it feasible to reclaim the overflow. Reclamation during times of more frequent paint changes is not considered practical.

Just-painted products are conveyed directly into the gas-fired bake oven. As noted on the flow diagram, the bake oven in the Hoffman system, though only 38 feet long, gives required baking-time-per-piece through three passes. With conveyor speed at 5 feet per minute, for example, total baking time is 25 minutes.

Hoffman uses this oven at various temperatures up to 450° F., depending upon the optimum curing temperature for the paint or paints involved. For lacquer finishes, the oven is operated at "room" temperature.

Products emerging from the bake oven are sufficiently cooled for handling and packaging by the time they reach the unloading zone.

The overall system occupies a floor area 104 feet by 44 feet, with provision, as mentioned, for future expansion of the 3-stage washer requiring an additional 13 feet in length.

NEW
INDUSTRIAL LITERATURE

Air Compressors

Complete details are included in a new bulletin which shows how air compressors have incorporated low friction design and precision manufacturing to render as much as 22.6 per cent more air per power dollar. These savings are said to be possible through (1) shorter piston stroke, (2) slower piston travel, (3) ball-bearing mounted crankshaft, (4) full-floating piston pins, and (5) controlled oil feed to all bearing and cylinder surfaces. For complete information, write for catalog C-50 on air compressors, Dept. MPM, The DeVilbiss Co., Toledo 1, Ohio.

Solenoid Selector and Free New Bulletin

A complete booklet describing the many applications of solenoids is available, along with a solenoid selector that quickly and easily matches a solenoid to a specific application. Applications include valve actuation, clutch operation, switch function, metering devices, shutter and damper control, and many other operations. For the free bulletin and solenoid selector, contact METAL PRODUCTS MANUFACTURING, York St. at Park Ave., Elmhurst, Ill.

Enamel Art on Metals

A complete guide to porcelain enameling on all metals for those interested in the art aspect of porcelain enameling is available. The author of the book is the well known art enameler, Edward Winter. The book can be obtained from Watson-Guptill, New York City.

Power Press Bulletin

A 20-page bulletin illustrates and describes types of power presses and some considerations affecting their selection. The bulletin includes fundamentals of press working of metals with sketches, tables, charts and other pertinent data as an aid for engineering, shop and purchasing personnel. It assists the user in selecting the type press most appropriate for his work. For the bulletin #52151, contact Dept. MPM, Federal Machine and Welder Co., Warren, Ohio.

Pocket Size Catalog on Perforated Materials

A new 156-page book on perforated metals and other materials has just been released. It is a handy, pocket size volume, described as General Catalog No. 75.

The book contains much new technical data, and devotes over 30 pages to illustrating designs in perforated metals and how they are used. Handy caption margin tabs facilitate finding desired information.

Use — illustrations include household appliances, automotive, lighting fixtures, architectural, household products, and miscellaneous. For your free copy, write to Dept. MPM, Harrington & King Perforating Co., Inc., 5640 Fillmore St., Chicago 44, Ill.

Textured Metals Case History

A case history of how textured metals saved a manufacturer over one-third in cost and cut down on installation time, labor, materials, and reduced field maintenance to a minimum is available for the asking. In addition, this manufacturer is said to have gained an attractive mar-resistant surface that accented the design and function of the unit. This folder also shows an array of the newest textures in this versatile material, together with specifications. For the folder, write Dept. MPM, Ardmore Products, Inc., 163 Atlas Road, Kenilworth, N. J.

Corrugating Sheets With Roll Forming Machine

It is now said to be possible to corrugate 20 through 28 gauge galvanized steel, aluminized steel, and plain and embossed aluminum. A new roll forming machine available requires only vertical adjustment for gauge range. Roller die tooling is available for ½" or ⅞" depth. The operating speed of the machine is 150′ per minute, and it is claimed that an excellent control of coverage and depth is possible. For complete information, contact METAL PRODUCTS MANUFACTURING, York St. at Park Ave., Elmhurst, Ill.

Long Lasting Cling Oil

This manufacturer offers a cling oil which is guaranteed to last 3 to 10 times longer than ordinary oil. The four-page bulletin points out that tests have shown that this product reduces drippage up to 91 per cent, effects 89 per cent less bearing wear and replacement, reduces labor of oiling up to 90 per cent, reduces the use of power up to 43 per cent, increases cleanliness and safety, and reduces fire hazard. It is said that this material is excellent for lubricating press equipment, conveyors, or moving parts in ovens. For your copy of this bulletin, write Dept. MPM, L. R. Kerns Co., 2659 E. 95th St., Chicago 17, Ill.

Maximum Finishing Oven Efficiency

Six questions are answered in a new booklet which carries the title above. Some of these are: Does the finishing system have capacity for increased production?; Is the equipment simple enough to allow easy maintenance?; What type of materials handling is best suited for a particular process in production? These are just a few of the questions answered in this booklet. For free copy, write METAL PRODUCTS MANUFACTURING, York St. at Park Ave., Elmhurst, Ill.

Anodizing, Phosphatizing Machines

A new bulletin completely describes plating and processing machines that include functions for etching and anodizing, pickling, phosphatizing, and other related processes. This bulletin describes the company's single row plating and processing conveyor, which is the result of research and development and 60 years experience in plating and building such equipment. Such features as permanently lubricated bearings, positive electrical contacts, and mechanism supported by separate structure are a few of the features of this equipment. For the free bulletin, write Dept. MPM, The Meaker Co., 1629 S. 55th Ave., Chicago 50, Ill.

Electrolytic Zinc-Coated Steel

A free brochure is available which describes the qualities of this company's electrolytic zinc-coated steel for both outdoor and indoor use. This zinc-coated steel reportedly will not peel or flake after fabrication. For complete information and the free booklet, write Dept. R-7, Weirton Steel Co., Weirton, W. Va.

safe transit

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editorial voice of the national safe transit program

devoted to improving packaging methods and shipping and materials handling methods for the appliance and metal products manufacturing industries. This section contains plant experience information and industry advances for the use of all executives and plant men interested in improving packaging and shipping methods and in loss prevention. The section contains complete information on the national safe transit pre-shipment testing program for packaged finished products and detailed reports of divisions and sub-committees of the National Safe Transit Committee.

New Safe Cargo Anchor Belt Rail System

To aid railroads and shippers in the battle to reduce damage to merchandise in transit, two new steel products that literally "armor plate" the inside of a boxcar and provide a maximum of load-anchoring and blocking points, have been announced jointly by the Youngstown Steel Car Corp. and Republic Steel.

Youngstown Steel Car has unwrapped its new "Safe Cargo" steel strap anchor belt rail system, a unique approach to anchoring freight through a series of permanent wall anchors, while Republic Steel has entered the freight car flooring market with a steel-and-wood combination floor designed to last the lifetime of the railroad car.

Both products were on view at a private showing for industry held recently at Youngstown Steel Car's Niles, Ohio plant, where the feature attraction was a railroad car outfitted with the first example of the new systems in combination.

The heart of the "Safe Cargo" system introduced by the Niles firm is typified in the exhibit car, which uses a series of eight anchor belt rails which run in parallel tracks for the length of the car. Fitted with anchoring pins fixed on 9-inch centers, the rails thus provide 640 anchor points to keep loads from shifting or sliding under even the most severe transportation conditions. Additions in the number of rails can raise the number of anchor points to 1,000 or more, and anchoring pins are available on either 9 or 18-inch centers.

Program Stresses Carrier-Manufacturer Cooperation

In an effort to lend broader emphasis to the National Safe Transit Program, the NST Committee has just completed work on a three-step procedure whereby the individual carrier may initiate action which will result in increased participation in the program. This carrier program was previewed by the trucking industry representatives at the ATA, National Freight Claim Council Annual Meeting in Denver, Colo., where it was received with enthusiastic approval.

The program in brief: For every carrier customer who consistently files claims on products of a repetitive or assembly line nature, one of the following approaches may well be the answer to his problem.

1. Refer your customer's name and address to the National Safe Transit Committee, giving a brief description of the product(s) he manufactures. NST will contact your customer, keeping your name in confidence should you so desire.

2. Refer your customer's name to any one of the many NST certified testing or container laboratories. The laboratory will be happy to assist you by having one of their representatives call on your customer.

3. Approach your customer through your own sales organization, using a frank offer of joint cooperation for Safe Transit as a mutually-rewarding way of increasing profits.

Stress the fact that when a poor or weak packaged product is shipped, damage becomes a very real possibility.

Point out that when a packaged product meets the NSTC test requirements, it is definitely not a poor or weak package.

Indicate the benefits of using the Safe Transit label, not only because of the safe handling which carriers will afford it, but drive home its sales value to distributors and customers as they realize that here is a manufacturer doing everything he can to deliver the best possible product in the best condition possible.

Back up your presentation with the expressive NSTC literature; the comprehensive "Benefits" folder, "Teamed For Safe Transit" — testimonial to shipper-carrier cooperation, and many others which are available.

Any manufacturer who fulfills his obligations under the National Safe Transit Program, meeting the Safe Transit test requirements, should be eager to use, and point with pride to, the Safe Transit label.

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1958 — Speed Queen's Golden Anniversary Year . . . marks the 30th year in which their famous laundry equipment has been protected by CHICAGO MILL Shipping Containers. CHICAGO MILL *Wirebound Containers* for domestic shipment and *Plywood Containers* for export shipment have provided safe shipment, space saving storage and economical protection for all the famous Speed Queen washers and dryers, from the early models to the modern "Golden Anniversary Twins" electric washers and dryers!

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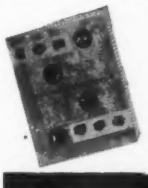

PALLET BOXES—Wire Bound

PALLET BOXES—Hinged Corner

Cleated Boxes

E-Z Pak Cleated Corrugated (Watkins type)

Wirebound Crates

Wirebound Boxes

Corrugated

Hinged Corner Crates or Boxes

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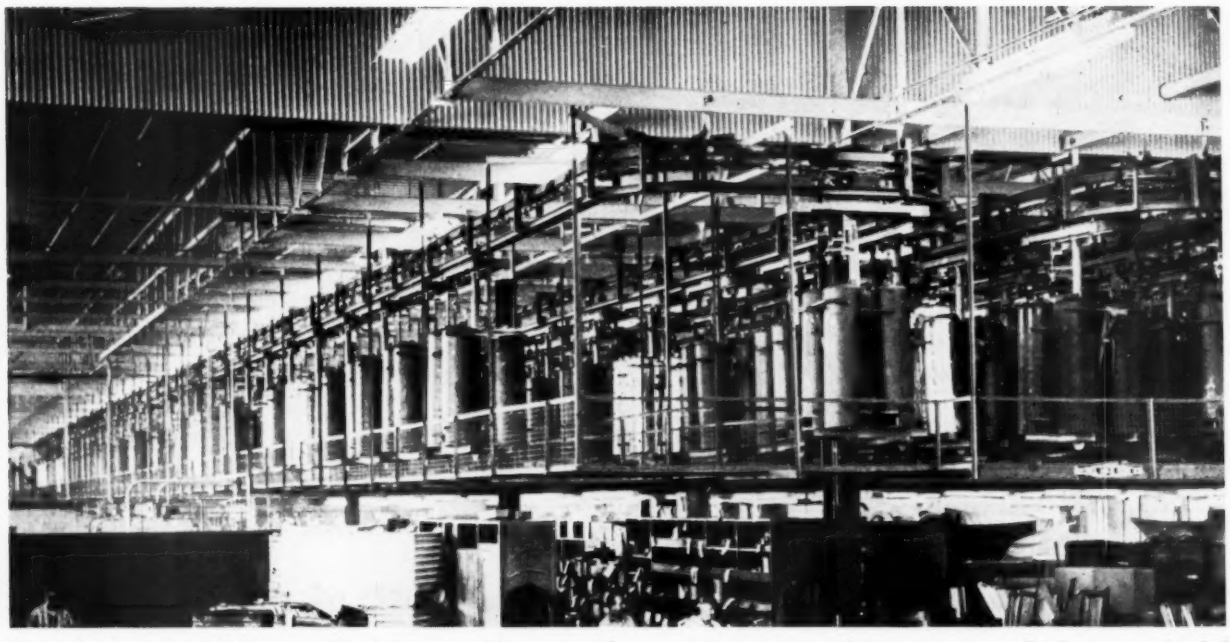


General view of 2,300-foot overhead power-and-free water heater tank conveyor and storage system. Tank carriers, loaded with four tanks each, circulate continuously on this system until needed at final assembly line.

PHOTO COURTESY THE PAYNE CO.

New appliance plant features automated materials handling

THE NEW PLANT of Day and Night Mfg. Co. and The Payne Co., (divisions of Carrier Corp.) La Puente, Calif., (officially opened in October, 1957), was designed and built around its materials handling system. Company officials admit frankly that the primary objective in building a new plant was the absolute necessity of reducing the excessive materials handling costs which were inherent in the original plant. With such a clear-cut goal, nothing was omitted that would detract from its attainment. As a result, the new plant incorporates one of the finest materials handling systems that can be found in an appliance manufacturihg establishment anywhere in the West Coast area.

Installing such a system was not a simple procedure, due largely to the variety of products produced, and variations within each product itself. In all, eight different basic product lines of water heating, heating, and air conditioning equipment are produced. Most of the individual lines are manufactured in variations for two or more trade names and, of course, in different sizes, quality models, and control adaptations for different types of gas fuels. Currently, some 747 different unit variations are rolling off the production lines.

To add to the difficulty of efficiently handling this huge number of product variations, some of the products (or components for a product) can be produced virtually from start to finish on single-purpose, highly-mechanized equipment. Other products or components are at the other extreme and must be produced more nearly on a job lot basis by departmentalized facilities which are general rather than single-purpose. In between are many products or components which require a blend of these two opposites — with general-purpose departments performing certain operations and, where feasible, single-purpose automated facilities performing the others.

Basically, the new plant layout was designed around a materials handling system made to transport materials from point to point, without retrogression, with a minimum of transfers, and to deliver them to their appropriate work places or production centers in a manner to avoid congestions, delays, and unnecessary manual handling. To accomplish this, the most modern materials handling equipment of each type was installed, with each type chosen for the specific kind of handling it must perform. The types of material handling equipment include a power-and-free conveyor system for storage of in-process parts (to be described in detail later), nine overhead chain conveyors totalling approximately 8,400 ft. in length, a complete interlocking crane system, power slat and belt conveyors where needed, hundreds of feet of auxiliary roller conveyor, plus numerous special handling devices of many types.

Another factor which induced difficulty in efficient handling is the widely diversified production rates on the different products. Some products are produced at a rate of less than 10 a day; others are turned out at three a minute. Two workshifts are employed

in some departments; one workshift in others. Yet both departments may be producing parts for the same product. Some sort of storage "cushion" had to be evolved to handle this situation.

The power-and-free overhead conveyor system solved the in-process storage problem generated by the inequalities in production speed on the boiler component of the mass-produced water heaters. The boiler galvanizing and porcelain enameling departments work two shifts; the water heater assembly line only one shift. The power-and-free conveyor "stores" the boilers produced on the odd shift until the assembly line is ready for them.

The power-and-free conveyor is approximately 2,300 ft. long, and its primary purpose is to store conveyor carriers (loaded with four boilers each) which circulate around the path of the conveyor until they are needed by the final assembly department. The four boilers on each carrier are all alike, so that no confusion is caused by mixing at this point.

The entire power-and-free conveyor system is controlled by a single operator stationed at a "lowerator" in the final assembly area. When the assembly line requires a certain type of boiler, a signal is given by a push button station which operates an exit switch from the main storage conveyor into a spring pusher bank conveyor. As the carriers with the desired boilers reach this switch, they automatically transfer to the bank conveyor. This switch is equipped with a counter device which can be set for the number of carriers wanted, then a bell signals the operator when the selected number of a specific carrier has entered the storage bank conveyor.

To facilitate automatic selection of the wanted carriers from the power conveyor, each carrier is provided with its individual signal arrangement which can be set for any one of 25 different designations. Twenty-four of these designations represent the different types and models of boilers produced; the 25th that the carrier is empty. The signal is set to designate the type of boiler contained at the time the conveyor carriers are loaded. After the operator has signaled the number and type of boilers needed, and the conveyor carriers have entered the spring pusher bank conveyor, they are lowered to the assembly line floor by the lowerator. The boilers are then unloaded and the conveyor carrier is elevated back to the free spur from which it enters again onto the powered section.

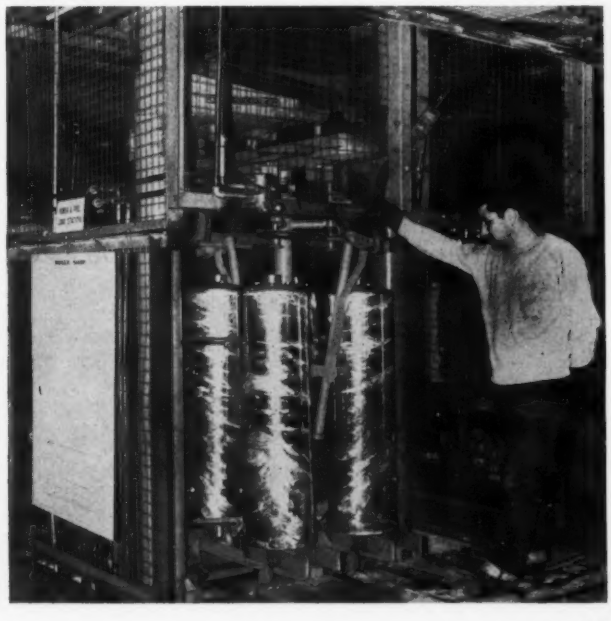
When an empty carrier enters the loading station lowerator, it is automatically lowered to floor level for loading. This carrier then receives its capacity of one particular type of boiler, and the operator at this station sets the signal flags on the carrier to coincide with the code identification for this boiler. Once again the loaded carrier is placed back on the free spur, and from there is transferred into the power-and-free line and circulates until called for by the final assembly department. As already noted, the conveyor system is provided with two combination elevators and lowerators — one in the loading area, the other in the assembly department. Both units are designed to receive carriers from the conveyor line after it has been either loaded or unloaded. The operation of these lift units is electrically controlled by the operator at each station.

Because of this versatile power-and-free conveyor system, it is now possible to store 1,080 boilers of as many as 24 varieties. These boilers include both galvanized and porcelain enameled units currently produced on a two-shift basis. Then the one-shift water heater assembly line can select the boilers as required.

In another case, a problem created by a wide divergence in production rates was solved by making the hand spray paint line conveyor a dual-purpose installation. To accomplish this, this single conveyor has two pickup and two delivery stations. Low-production furnace casings are picked up at their point of fabrication, carried through the hand spray finishing line, then ultimately delivered to their points of useage on the final assembly line. At the same time, but in a different loading area, this

(Left) — Lowerator located near head of final assembly line where tanks are lowered from overhead storage conveyor system. Pushbutton panel at right allows operator to select type and number of heater tanks to be delivered from powered section. (Right) — Elevator in fabrication section is loaded with four galvanized tanks, ready to be placed on conveyor until needed on assembly line.

EXCLUSIVE MPM PHOTOS



EXCLUSIVE MPM PHOTOS

(Left) — Gantry crane (outside doorway) has just delivered its hoist and load of coiled steel stock to the bridge crane which services the storage area. Stock is later slit and sheared to proper width and length. (Right) — This powered belt and slat-type conveyor carries water heaters along the final assembly line and past the test pit.

same conveyor is loaded with components for many other products, and these, too, are carried along with the furnace casings through the hand spray finishing line. These component parts are unloaded in still another area where they are systematically and efficiently stored prior to being loaded on supply conveyors which will carry them to the final assembly lines as needed. These intermediate storage areas, with their assembly line supply conveyors, permit fewer parts handling by fewer people, and avoid bulk handling by lift truck or skid to assembly lines for partial use, with surplus returned to storage. This dual-purpose conveyor emphasizes the main objective of the entire materials handling system — to have what is needed, when it is needed, and at the place it will be used.

Although the power-and-free conveyor is an excellent example of semi-automatic materials handling, and storage of in-process parts in unused overhead space and the dual-purpose spray paint line conveyor innovations in making a single installation do two important jobs at one time, these "highlights" are only a part of the total materials handling installations in the new plant. The crane system used in the raw materials receiving department is in itself an outstanding installation, serving an area where efficient material handling is all too often ignored.

This system consists of a five-ton capacity motorized single-leg gantry crane and three five-ton, three-rail underhung motorized bridge cranes. Three interlock points make it possible to transfer a hoist and its load from the gantry to any one of the three bridge cranes. The bridge cranes have a 54 ft. span, and are single-girder type. Two of these cranes are directly interlocked to, and service, the steel storage bay and shearing department. The runways for the gantry and these two bridge cranes are 320 ft. long. The third bridge crane is directly interlocked to the first two cranes and services the heavy presses and head end of the boiler shop. The runway for this bridge crane is 170 ft. long.

In addition to these cranes, the plant is also equipped with a one-ton bridge crane which is used to handle copper tubing and aluminum fin coil stock used in the fabrication of spiral fin air conditioning coils. This crane is a two-rail, underhung hand-propelled bridge crane of 30 ft. span, single-girder type. The two-rail runway is 130 ft. long. This arrangement of cranes, not only to unload and store raw materials, but to service entire departments as well, again exhibits to some extent dual-purpose functions.

In addition to the overhead conveyor on the hand spray paint line, similar but separate conveyor installations service the flowcoat paint line, and two electrostatic paint spray lines. A 1,076 ft. overhead conveyor is used to carry water heater boilers from the boiler shop to the galvanizing and enameling departments, and then to return the enameled units to the boiler shop for completion of fabrication. A 364 ft. long boiler parts wash conveyor is used to carry the tank component parts (flues, bottoms, heads, etc.), through a spray washer, and then to deliver them to the points of fabrication usage. These are all heavy-duty conveyors mounted on a 4-inch I-beam track.

Lighter duty conveyors mounted on a 3-inch track include a 744 ft. long installation for transporting fabricated parts to the water heater final assembly line, an 834 ft. long upright furnace supply line which carries parts to the upright furnace final assembly line, and a 580 ft. long wall heater and horizontal supply conveyor which carries parts to both the wall heater and horizontal-type furnace final assembly lines.

Of the seven final assembly lines now in operation in the new plant, three use belt and slat-type conveyors, plus shorter gravity roller-type conveyors wherever they are needed. These three are the high production assembly lines used for water heaters, furnaces, and radiant wall heaters. The other four assembly lines, because of their lower production rate, are serviced by gravity roller-type conveyors only, but with each conveyor specifically designed to suit the needs of its particular application. Other departments, such as the boiler shop, welding department, pipe work assembly department, etc., make use of gravity roller

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Presstime News

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Modern Kitchens, Marvel Metal Products Co., Republic Steel Corp. (Berger Division), St. Charles Mfg. Co., Whirlpool Corp., and Youngstown Kitchens Division of American-Standard.

Other members are the American Gas Association, Ferro Corp., Formica Corp., Just Mfg. Co., Nutone, Inc., Progress Mfg. Co., Stanley Hardware Division of Stanley Works, and Trade-Wind Motorfans, Inc.

Copies of Kitchen Planning Book may be obtained by writing to Dept. MPM, Better Kitchens Institute, 812 Engineers Building, Cleveland 13, Ohio, or to special projects editor, MPM.

New Whirlpool Burner

New addition to the Whirlpool Miracle Gas Kitchen is a power burner, a device which mixes air and gas before combustion, and is concealed under an easy-to-clean flush surface made up of Pyroceram squares.

The burner was shown at the American Gas Association's convention, held in Atlantic City, N. J., October 13-15.

One-Coat PE to be Featured at Midwest Enamelers Club Meet

The first meeting of the '58-'59 season of the Midwest Enamelers Club will feature Harlan Tripp, General Electric, Appliance Park, Ky., with a discussion of one-coat white porcelain enamels. Tripp has had considerable experience in this phase of enameling at GE. The meeting will be held Dec. 6th at the Sheraton Hotel, Chicago. Time for luncheon will be 12:30 PM. Free door prizes will be offered.

AMP to Continue Diversification

John Graham has been appointed to assist the president of American Metal Products Co. in their diversification program. Andrew Mras, president of AMP, said Graham will carry out and expand the company's program of diversification through company acquisitions. Graham came to AMP from The Bendix Aviation Corp. Earlier company acquisitions include Borroughs Mfg. Co., Kalamazoo, Mich., (metal shelving and office furniture); General Spring Products, Ltd., Kitchener, Ontario, (automotive seating); Tube Reducing Corp., Wallington, N. J., (metal tubing); and Allianceware, Inc., Alliance, O., (plumbing fixtures).

Design Materials Featured at Conference of Industrial Designers

Among the highlights of the National Conference of Industrial Designers Institute in New York City recently was a show featuring materials and products specified by industrial designers. Among the exhibitors were the Textile Fiber Division of Union Carbide Chemical Co., Croname, Inc., Rigidized Metals Corp., General Tire and Rubber Co., Arvin Industries, Inc., Columbus Coated Fabrics Corp., Eagle Ottowa Leather Co., Hawley Products Co., Keeler Brass Co., Master Etching Corp., Park Nameplate Co., Inc., Poloron Products Inc., The Polymer Corp., U.S. Plywood Corp., Polyplastex-United, Inc., and the American Biltrite Rubber Co.

New Facility for York at Decatur

One of the two plants of the Marvel-Schebler Products Div., Borg-Warner Corp., Decatur, Ill., is being converted to the manufacture of air-conditioning and refrigeration equipment. This plant, formerly known as the Transmission Dept., now has become a part of the corporation's York Div., and has been renamed the Decatur Works of the York Div., Borg-Warner. The new operation will be headed by S. S. Meadows as vice president of the York Div. and general manager of the new Decatur Works.

COMING FEATURES

DESIGN

DISHWASHER FOR THE SPACE SAVER MARKET

STRATO FLIGHT BATHROOM SCALE

FABRICATION

AUTOMATIC BRAZING AT CARRIER CORP.

THE ALUMINUM BASE ALLOYS

FINISHING

FINISHING 15,000 PARTS PER SHIFT

PORCELAIN ENAMELING AT VITRI-FINISH

Give Award for Development of National Electrical Week

Merrill E. Skinner, vice president and director of sales for Union Electric Co., St. Louis, was awarded a special resolution of appreciation "in recognition of his outstanding service and leadership in the development of National Electrical Week" at a press conference in New York City October 10th.

"Electricity Builds Jobs," will be the theme of National Electrical Week, February 8-14, 1959, as announced at the press conference. "The Week will still be an 'umbrella activity' for all branches of the electrical industry, providing a springboard for the various educational, public relations, and promotion goals of our industry," N. J. MacDonald, general chairman of the N. E. W. Committee, said.

Grand Rapids Gives Kelvinator Key to the City

Receiving the key to the city of Grand Rapids, Mich., during the recent national sales convention there, is Marvin Mueller, Minneapolis, president of the Kelvinator district managers council. Mayor Stanley Davis (center) presented the key. Homer L. Travis, vice president, sales, looks on.

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• LOYD B. CHAPPELL & ASSOCIATES, 821 Edinburgh St., San Mateo, Calif., Diamond 3-8806

New appliance plant

→ *from Page 78*

conveyors plus numerous specially-powered automatic handling devices.

While, as mentioned at the beginning of this article, the new Day and Night Mfg. Co. and The Payne Co. plants were literally designed and laid out around their materials handling facilities, this does not mean that similar facilities cannot be installed in plants that are already in operation. It will be noted that most of the facilities described occupy overhead space—a very much unused item in many plants. A storage system, such as that provided by the new plant's overhead power-and-free conveyor system, could be employed in many operating plants to relieve overly-congested floor space areas. A bit of planning, and perhaps minor alterations in plant layout, might reveal how conventional conveyor systems could be made to serve a dual purpose. Interlocking crane systems which span and serve several storage and shop areas have been installed by many plants long after the plant was in operation.

3-M Brand Porcelain Enamel Announced by American Lava

Formal announcement of the availability of "3-M" brand porcelain enamel for aluminum was made October 1 by American Lava Corp., Chattanooga, Tenn., a subsidiary of Minnesota Mining and Mfg. Co. The announcement of a lead-free porcelain enamel for aluminum by the 3-M subsidiary is said to have followed extensive research and development work, and field testing.

Present applications include architectural panels, aluminum cooking ware, advertising signs, and similar applications. Uses under consideration by the producer are said to include aluminum boats, awnings, outdoor furniture, sanitary ware, and other items.

Extremely thin coatings are claimed for the new enamel, and a wide variety of color is available, including reds and yellows, "pure" whites, and pastel colors. It is further claimed that a full range of colors may be obtained from high gloss to full matte finishes with the same frit.

Chemical resistance is said to be comparable to that of sheet steel enamel. Standard spray and furnace equipment are suggested, with firing temperatures in the range from 950-1,000° F.

FORMABILITY OF METALS by Lester F. Spencer, Consultant in Metallurgy. Sixteen pages—two color. Covers: basic characteristics of metals, the carbon steels, press operations and roll forming. 25¢ per copy.

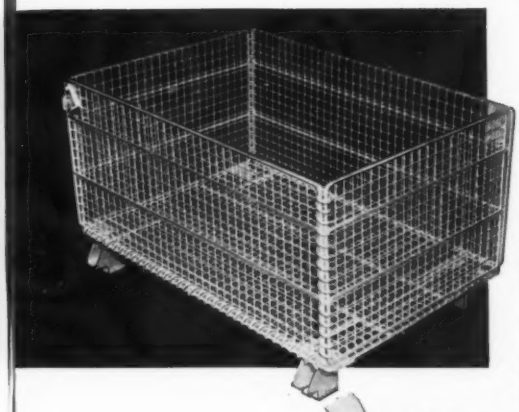
HERE'S THE answer
to your small parts HANDLING-STORAGE-TRANSPORT

NEW

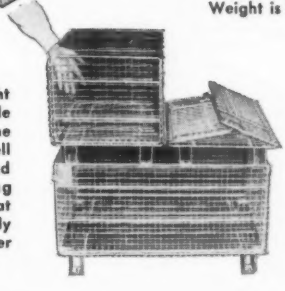
PALLETAINER 'Junior'

The new lightweight Palletainer 'Junior' models are sturdy, close-meshed, all-steel containers designed for more efficient handling, storage, protection and safe transit of any small parts—assembled or finished products. Ruggedly built of reinforced welded steel wire mesh, the 'Juniors' incorporate many of the outstanding construction and convenience features found only on larger, heavy duty containers.

Check your plant today . . . see how many places the 'Junior' models could easily smooth production, speed processing, hasten deliveries and save valuable handling time.

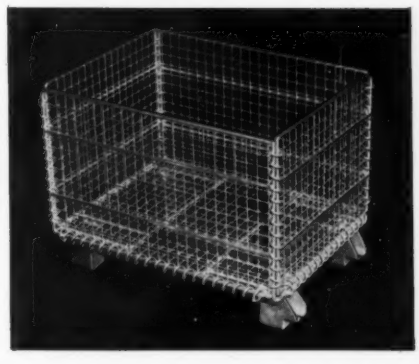


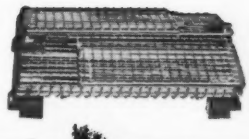
'Junior' Model No. 3220—500 lb. capacity. All welded steel wire mesh, reinforced. 32" long by 20" wide and 16" high. Mesh openings are 1½" square. Equipped with 4 fabricated steel stacking legs welded to deck bottom. Finished in fire-baked Aluminum paint. Weight is 38 pounds.



The illustration at right shows the reinforced side and end structure of the 'Junior' models as well as the fold-down and safe, simple stacking principles used. Note that the Model 2016 will easily interstack with the larger Model 3220.

'Junior' Model No. 2016—200 lb. capacity 20" long by 16" wide and 12" high. All welded steel wire mesh. 1½" square mesh openings. Four fabricated steel stacking legs. Lossproof side locks. Aluminum painted. Weighs 25 pounds.





'Junior' Palletainers fold down quickly and easily to save over 75% of their open area. Saves storage space, makes handling easier and lowers return shipping costs.

Hi-Lode
2000-4000-6000 lb. capacities

Bearing Plate
2000-4000-6000 lb. capacities

Bulk Lode
2000-4000-6000 lb. capacities

Warehouse
3000-4000 lb. capacities

plus . . . the big, heavy-duty Palletainers in a variety of types and practical sizes and capacities to meet every industrial need.

Write today for complete information, prices and descriptive literature.

Gentlemen: Please send me my copy of your new Palletainer catalog and literature covering the new Palletainer 'Junior' models.

Name_____

Company_____

Address_____

City_____ Zone____ State_____

☐ Please have your local Palletainer representative contact me at once.

UNION STEEL PRODUCTS CO.

ALBION, MICHIGAN

MANUFACTURING PLANTS IN COMPTON, CALIF. AND WATERLOO, QUEBEC, CANADA

SORENG SERIES 733 PRESSURE SWITCH is a sealed unit that prevents moisture penetration. It can be used wherever economical and dependable level control of liquid is required. Typical functions are shutoff of soft drink machine after contents have been exhausted and maintenance of constant liquid level in coffee making machine.

Controls Company of America's **MODEL 291 SOLENOID VALVE** is equipped with stainless steel body to handle such corrosive fluids as juices and syrup concentrates. Compact design allows easy fit in limited installation areas. This extensive product line also includes Models 206 and 207 Thermostatic Expansion Valves in ¼, ½ and 1 ton sizes. Also three sizes of Trap-Dries for dependable valve protection.

SORENG SERIES 755 SNAPAC SWITCH is a compact, inexpensive double circuit switch. The pin plunger is adaptable to operations requiring limited over-travel where the actuating device can be accurately controlled. For limit, safety interlocking and control switch requirements. Rating: 15 amp., 125 volts, AC; 10 amp., 250 volts, AC; ½ h.p. 125/250 volts, AC.

SORENG SERIES 750 SNAPAC SWITCH is available in pin, plunger, panel mounting and lever action types. For limit, safety interlocking, door switch and control switch requirements. Rating: 15 amp., 125 volts, AC; 10 amp., 250 volts, AC; ½ h.p., 125/250 volts, AC.

SORENG SERIES 800 DOUBLE T SOLENOIDS — Four sizes offering 12 sets of electrical characteristics satisfy virtually any application at production run prices. Exclusive double T plunger results in more pull at point needed. Tri-podal seating surface assures quiet operation. Available in 110 volts and 220 volts.

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